TECHNOLOGY DEPT.

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June 12, 1940

NATIONAL PETROLEUM NEWS

AVIATION FUEL BY CATALYTIC CRACKING PROMISES QUICK VOLUME AT LOW COST

Highly aromatic type aviation fuels produced by catalytic cracking are recommended as offering greater possibilities for high-octane fuels than paraffinic type fuels. Page R-210

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ALKYLATION PLANT TAKES OLEFINS LEFT BY SELECTIVE POLYMERIZATION

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HOUDRY UNITS' HEAT TRANSFER SALTS DESCRIBED AT A.I.C.E. MEETING

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LATEST NEWS

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Fueling of warplane fleet studied by defense group at Washington; other developments in program. Pages 9 and 11.

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New definitions of "executive" employes under Wage-Hour Law urged by oil men. Page 20.

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Mid-Continent independent refiners can meet 80-octane Ethyl gasoline demand, but manufacturing cost rises. Page 12.

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N.P.N. launches educational program to supply the Industry with engineering reasons for frequent oil changes and lubrication of cars. Page 25.

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Indiana Standard loses in suit brought by minority stockholders of Pan Am. Page 12.

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Tax bill nears passage, effective date for "gas" and lube oil tax increases is July 1. Page 9.

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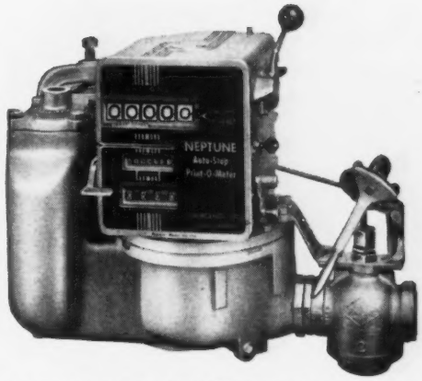

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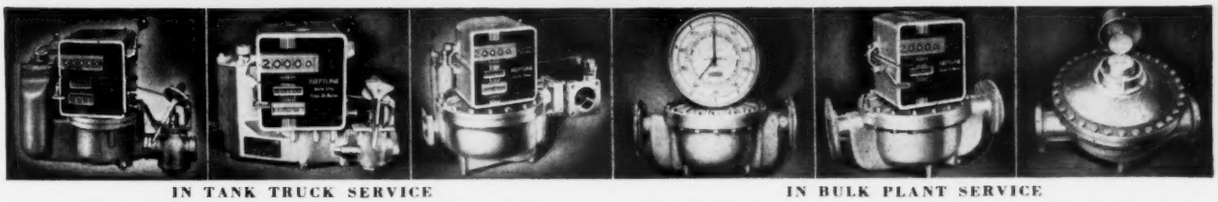

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Meter for barge or tank car unloading

Arnold A. Sherwood

George Allee

● **Kansas City oil men outdid themselves Sunday in entertaining the Chicago and eastern oil men en route to Denver for convention of the Independent Oil Men's Association.**

—From NATIONAL PETROLEUM NEWS, September 29, 1920.

THIS news item from NPN of 20 years ago was really the birth notice of the Oil Men's Club of Kansas City, Mo. It tells of a reception committee organized at the suggestion of Joe L. Walsh, Mutual Oil Co., to entertain delegates to the 1920 convention of Independent oil Men's Association at Denver whose special train stopped at Kansas City en route.

From associations on this reception committee grew the idea of an oil men's club. So, a month later, Oct. 29, 1920, H. C. Hunter, Cleveland Barrel Co., called a meeting to organize the Oil Men's Club of Kansas City.

At first regular meeting, held the first Monday in December, 1920, Mr. Hunter was named chairman, V. E. Sandberg, Emblem Oil Co., vice-chairman, and the following other officers and directors: E. F. Bergolde, Acme Petroleum Co., treasurer; J. A. Vance, Kansas City Structural Steel Co., director; O. H. Williams, Mutual Oil Co., director; J. J. Taxman, Taxman Refining Co., director; H. C. Linder, Southern Oil Corp., director; and Fred L. Patterson, secretary.

Membership in the Kansas City club has grown until now it numbers 185 members.

Besides its social activities—stag parties, mixed parties, golf tournaments and the like—the club has a well-earned reputation for its relief work. At all times it has on hand a "battle chest" of never less than $500 for relief and charity. At Christmas and through the winter it cares for some 50 destitute families.

Arnold A. Sherwood, of Bertram Naphtha Co., club chairman, has been a member for 15 years. George Allee has been secretary since 1923. Harry A. Rapelye, Continental Can Co., is vice-chairman, of the directors who also include Dick Kerr, Skelly Oil Co.; L. C. Hickox, Paramount Petroleum Co.; O. M. Ogden, Sinclair Refining Co.; R. L. Faubian, Pioneer Equipment Co.; J. D. Brown, Eureka Petroleum Co.; Harold Berg, Ethyl Gasoline Corp., and Walter Bruer, Columbian Steel Tank Works.

NATIONAL PETROLEUM NEWS

VOLUME 32 WEDNESDAY, JUNE 12, 1940 NUMBER 24

Defense Plan Begins to Shape Up

WASHINGTON, June 11.—Vague but nonetheless significant outlines of the oil industry's role in the national defense program began to assume form here this week as the tempo of national defense actively emerged from the ballyhoo stage.

Chief among the week's developments was the fact that the oil industry now knows it will tie into the program under the direction of Edward R. Stettinius, Jr., former chairman of the U. S. Steel Corp., who resigned to supervise the flow and fabrication of raw materials as a member of the Advisory Commission on National Defense.

Second was the announcement by Interior Secretary Ickes, a member of the National Defense Council, that the Petroleum Conservation Division of his department is surveying the oil industry to determine its ability to meet possible emergency oil and gasoline needs and to transport it from Mid-Continent and mid-western areas to strategic points on the East Coast.

Henderson Watches Prices

Thirdly, was the statement to NATIONAL PETROLEUM NEWS by Leon Henderson, member of the Securities & Exchange Commission and advisory national defense commissioner in charge of price stabilization of raw materials, that while he has "nothing special" in mind now as to oil, he "will be interested in the price angle" of the products of the oil industry.

The fourth significant and all-embracing development was the voluntary statement by President Roosevelt at his press conference on June 7 indicating that the President intended to let industrial executives such as Messrs. Stettinius, Knudsen and Budd of the advisory defense commission run their jobs without political interference.

The President's indication came in such a way as to indicate a serious attempt to dispel earlier suspicions that presidential advisers, notably Commerce Secretary Hopkins, might hamstring the industrial production managers who have been called in to gear the national industrial machinery behind the armament program.

The President's attitude suggested the feeling on the part of the Chief Executive that the important industry executives had more or less indicated that such freedom of action was nec-

(Continued on page 10)

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Ickes Studies War-Oil Plan

N. P. N. News Bureau

WASHINGTON, June 10. — Petroleum Conservation Division of Interior Department is sizing up the petroleum industry "to see whether it is prepared" to meet the requirements of the government under the national defense, Secretary Harold Ickes told his press conference June 6.

"We are having some studies made of the petroleum industry," Secretary Ickes stated in response to a planned question from a newspaperman as to "what plans, if any, are being made through the Petroleum Conservation Division to gear the petroleum industry to national defense?"

Continuing, Mr. Ickes said: "We want to know if there are enough oil supplies for us in any emergency and if there is whether it can be gotten to where it may be needed."

Says No New Law Needed

"I don't think we will need any legislation," the Secretary replied when asked by NATIONAL PETROLEUM NEWS whether his plans called for any legislation.

Amplifying his statement in response to other questions the Secretary explained study involved location of pipelines and

(Continued on page 10)

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Army's Needs Told to S.A.E.

By NPN Staff Writer

WHITE SULPHUR SPRINGS, W. Va., June 10. — Summary of the mechanized equipment which the Army will acquire during fiscal year beginning July 1, gives some indication of increased military demand for petroleum products, according to Lt. Col. E. E. MacMorland speaking here at the summer meeting of the Society of Automotive Engineers on "The Role of the S. A. E. in National Defense."

However, Colonel MacMorland said "the program for the supplementary funds recently requested by the President is not yet sufficiently clear to indicate the increased automotive items, except that the aircraft program will be further increased."

How S.A.E. Serves

Four services, for which S. A. E. is competent and qualified, to assist the war department in a rearmament program, were told by Colonel MacMorland on the opening day of the meeting. These 4 services are: "(1) Handling of advisory services by engineering committees; (2) acting as liaison between the government and your technical talent; (3) providing S.A.E. representatives on government technical committees; and (4) developing standards and engaging in research as required."

"Approximately 2566 airplanes will also be purchased in addition to the 5500 already authorized, making the program 8066." Of the items other than aircraft, trucks and tractors will be increased from 31,000 to 74,000, scout cars augmented from 485 to 1346, combat cars from 114 to 208, light tanks from 410 to 734, and medium tanks from 18 to 194. Aircraft figures, of course, do not include those authorized for the Navy.

Some distinguished services rendered by the society were brought out by the speaker, par-

(Continued on page 22)

Here Lies Madison, R. I. P.

N. P. N. News Bureau

WASHINGTON, June 10—Finis was written across the Madison oil decision this week with signing, sealing and delivering to the Federal District Court of the U. S., Supreme Court's judgment in the now-famous oil anti-trust suit in which highest court upheld conviction of 12 oil companies and 5 individuals.

New Tax Bill Nears Passage, Starts July 1

By Teletype
N. P. N. News Bureau

WASHINGTON, June 11.—Enactment of the new defense tax bill within the next 10 days and imposition of increased gasoline and oil taxes beginning July 1, 1940 was definitely in sight here today with House passage assured tonight and Senate consideration slated early the week of June 17.

The measure (Hr-10039) was due to pass House Tuesday night, June 11, in virtually the form in which it was reported by Ways and Means Committee. Bill was considered under a rule which allowed 6 hours general debate before being taken up for amendment. Proposals for amendment were limited to those approved by the committee.

Tax Rates Told

No delay is anticipated in applying the increased taxes since bill merely raises existing rates and involves no changes in language requiring promulgation of new regulations on excise taxes borne by oil and automobile industries.

Existing rate of 1c per gallon on gasoline is hiked to 1½c, lubricating oils, present rate of 4c per gal., is raised to 4½c and present excise of 4% on transportation charge for oil moved by pipeline is increased to 4½%.

Treasury Secretary Morgenthau and Budget and Tax experts of his department will testify Wednesday, June 12 in

(Continued on page 12)

Definite Plan Takes Shape For Speeding Up Defenses

(*Continued from page 9*)

essary to insure successful prosecution of the plans.

Result has been that the two key industry chiefs, Messrs. Knudsen and Stettinius, have dug into their jobs with picked aides from private industry with considerable vigor and attack.

Consolidate Buying

The President announced that he has instructed the Army and Navy departments to work through the industrial executives of the advisory defense commission in placing their orders. The military establishments were told by their commander in chief to consult the production division, in charge of Mr. Knudsen, regarding placement of all important contracts to insure the handling of them to the best advantage, production standards and expedited handling considered.

In line with this set-up the president also announced he had appointed Mr. Stettinius as chairman of a committee, including a representative of the War and the Navy departments, looking to the formulation of recommendations to the President concerning general problems of purchases to be made by the Federal government. This is with a view to the further consolidation of responsibility under the Treasury Procurement Division where they will come under the direction of Donald M. Nelson, acting procurement director, who resigned as executive vice-president of Sears, Roebuck & Co. to take over this post on June 1.

Under the TPD

This is significant to the oil industry as indicating a continuation of present peace-time practice of buying government oil and fuel requirements generally through the Procurement Division under the direction of one who is recognized as an able business executive. Mr. Nelson went to work for Sears, Roebuck & Co. as a chemical engineer in 1912 and has been in charge of merchandising for that organization and a vice-president and director since 1930.

FDR Holds Reins

Although no chairman has been designated for the Advisory Commission on National Defense it is now apparent that Mr. Roosevelt is handling the reins.

Another angle of no mean consequence to the success of the rearmament program are the indications that the cabinet members constituting the National Defense Council are playing a part subordinate to that played by the production managers who have been called in from private industry.

Henderson Eyes Oil

Word from Mr. Henderson that he is going to be "interested" in the oil price situation should be considered in the light of his background. Mr. Henderson, a member of the Securities and Exchange Commission, an economist of ultra New Deal hue, expounded some interesting theories about the oil industry during the hearings before the Temporary National Economic (Monopoly) Committee last fall. He is a member of the TNEC. His ideas of competition for instance are that price competition, as such, is nil in the oil industry, that it is really a big cartel (trust) with competition taking the form of extent of concessions companies offer in the way of station facilities, pumps, cementing driveways, painting of signs and stations, to achieve desirable locations and gallonage thereby.

Time alone will tell what ideas Mr. Henderson will develop as to the oil industry price situation and at best it promises to be novel and interesting regardless of whether it is practical or not.

Calls Hillman a 'Red'

One of the sharpest attacks upon any member of the Advisory Division Commission came Monday, June 10, in a speech on the floor of the House by Rep. Dewey Short of Missouri, criticizing Sidney Hillman, labor and employment co-ordinator of the commission as a Communist.

Ickes Studies Oil Industry To 'See If It Is Prepared'

(*Continued from page 9*)

their ability, if necessary, to get a larger supply from Mid-Continent and the Mid-West to the East Coast.

"There might be a question," he continued, "of whether it is being piped to the most strategic points."

Asked whether this involved gasoline and crude oil pipelines the Secretary said it may concern "either or both."

He indicated it may include the construction of some extensions to reach "most strategic points" if study of the situation discloses a need for same.

The study covers "every phase" of the industry including "production, consumption and place of consumption," he answered in those words when asked whether study would cover exports.

The transportation angle was, quite obviously, in the forefront of the study projected by Mr. Ickes.

Says Storage Not Involved

The storage situation will not be considered, the secretary told NATIONAL PETROLEUM NEWS, notwithstanding that the study is supposed to determine what the oil supply situation is and whether larger supplies can be gotten to strategic points on the East Coast if necessary.

The question of off-shore or tidal oil lands will not be covered, Ickes said since that is now the subject of a Senate resolution calling for a Congressional study—if adopted.

Asked whether industry co-operation may be needed the Secretary said they will need some industry co-operation, but he does not foresee any need for granting "immunity" from anti-trust law liability.

Inquiry at the department following the Secretary's discussion of the study developed that the work is just getting under way and that its scope has not been fully determined. The survey was described as sort of an industry "inventory" or "general picturization."

Disclosure that Ickes was making such a study came as no surprise here. Whether the "study" will be used as a basis for federal legislation later on was unknown although the Secretary declared legislation was not involved in answer to direct questions on this point. As seen here Ickes' interest arises from fact that as Secretary of the Interior he is the first-named member of the cabinet listed in the Act of August 29, 1916, as a member of the Council of National Defense (See NPN, June 3, 1940). Other cabinet members of the Council include the Secretaries of Agriculture, Commerce and Labor.

So far the President and the Advisory Commission on National Defense have held the spot light with cabinet officers' role—except Hopkins and Morgenthau—very minor.

Ickes Eager to 'Do His Bit'

Restiveness of the irrepressible Secretary of Interior in the midst of such activity, his anxiety to "do his bit" as a member of the Council of National Defense is no surprise. Scrutinizing the oil industry's ability to meet defense requirements puts him in line for a stellar role, not to mention, possibly, the accomplishment of his legislative designs against the industry.

It is interesting to note in this situation, however, that the President in announcing the advisory defense commission set-up indicated the cabinet-manned council would play an inactive part. Understanding hereabouts is that Edward R. Stettinius, Jr., national defense commissioner in charge of raw materials was in charge of the oil industry under allocation of industry responsibilities of defense commissioners.

See Aviation 'Gas' Civil Demand Rise

WASHINGTON, June 10.—That the oil refining industry may face a considerably enlarged civil aviation gasoline demand coincident with greatly expanded military aviation fuel requirements was indicated today in official figures of U. S. Civil Aeronautics Authority covering operations of 17 airlines in April, 1940.

The civilian carriers achieved an all-time-high in mileage flown in April totaling 8,331,759 revenue miles against 7,930,038 miles the previous month and 6,267,595 miles flown in April 1939. The April operations were up 32.93 per cent over April 1939 and miles flown in four months ended with April were up 32.04 per cent totaling 30,205,865 miles as against 22,876,619 miles in the same period in 1939, official figures show.

The civilian aviation activities in 1940 are privately estimated to run 30 per cent above 1939 operations.

Pollution Bill Still Stymied

WASHINGTON, June 8.—Enactment of stream pollution legislation at this session depends upon reconcilement of what, to date, has been widely variant views between House and Senate conferees on this subject.

A meeting of conferees on the bill (S 685) was held this week but no progress was made in ironing out differences.

Whether deadlock can be broken at next scheduled meeting on June 12, is uncertain. House conferees, except Chairman Mansfield, remain opposed to less stringent Senate provisions.

Fueling of Warplane Fleet Studied By Defense Group

By Teletype
N. P. N. News Bureau

WASHINGTON, June 11.—Fuel experts of National Advisory Commission on national defense and National Advisory Committee for Aeronautics are studying fuel requirements of the expanded air force contemplated under National Defense Plan, it was learned here today.

Study is being made through the fuels and lubricants subcommittee of committee on power plants of the National Advisory Committee for Aeronautics here as part of the work initiated by the group of airplane experts assembled by Treasury Secretary Morgenthau and now under William S. Knudsen, advisory national defense commissioner.

Group is headed by Dr. Geo. J. Mead, airplane engine expert assisted by a group of outstanding airplane engine, fuel and lubrication specialists. Among the latter is S. D. Heron who is on leave from Ethyl Gasoline Corp. where he was in charge of Aeronautics Research. He is vice-chairman of N.A.C.A. fuels and lubes sub-committee.

Job being done by this group includes a study of how much aviation fuel is needed, what octane number it should be and whether it is or can be made available.

The personnel of the group, aside from vice-chairman Heron, includes the following: Chairman, Prof. W. G. Whitman, Massachusetts Institute of Technology; Dr. D. P. Barnard, Standard Oil Co. of Indiana, Whiting, Indiana; T. A. Boyd, Research Laboratory Division, General Motors Corp., Detroit; H. K. Cummings, National Bureau of Standards, Washington; G. H. B. Davis, Esso Laboratories, Standard Oil Development Co., Elizabeth, N. J.; Major James H. Doolittle, Shell Oil Co., St. Louis; Lt. Henry R. Dozier, Bureau of Aeronautics, Navy Department; J. Bennett Hill, Development Department, Sun Oil Co., Marcus Hook, Pa.; Robert V. Kerley, Material Division, Army Air Corps, Wright Field, Dayton; Gaylord W. Newton, Civil Aeronautics Authority, Washington; Addison M. Rothrock, National Advisory Committee for Aeronautics Laboratory, Langley Field, Va. Also included are S. Paul Johnston, Co-ordinator of Research, N.A.C.A., a member of all technical committees of N.A.C.A., and George W. Lewis, director of Aeronautics Research, N.A.C.A.

'Oil And Gas' Probe Backed

N. P. N. News Bureau

WASHINGTON, June 10.—An investigation of "the natural gas industry" by the Senate Judiciary Committee was recommended today, June 10, by the Hatch subcommittee in reporting orally upon recent hearings pursuant to the Nye Resolution (S. Res. 245) proposing a broad investigation to determine whether there is a monopoly in the control of production, transportation, sale and distribution "of natural gas and petroleum."

Earlier hearings on the resolution were featured by clashes between counsel for the Missouri-Kansas Pipeline Co., Ex-Senator Robert J. Bulkley, and Thurman Arnold, Anti-Trust Division Chief, Justice Department, and others over Department's handling of its monopoly suit against Columbia Gas & Electric Co., and its subsidiary, the Columbia Oil and Gasoline Corp.

Although language of the resolution as introduced is broad enough to cover the petroleum industry there appears to be no disposition to dragoon the oil industry into the investigation since the strategy of proponents has been aimed at Department of Justice in the Columbia Gas and Electric consent decree proceedings now pending in federal district court at Wilmington, Del. This involves a dispute over control of the Panhandle-Eastern Pipe Line Co. between Missouri-Kansas Pipe Line Co., minority holder and Columbia Oil and Gasoline Corp., a Columbia Gas and Electric subsidiary.

While broad enough to cover the petroleum industry, oil was not discussed in preliminary hearings.

Oklahoma Conservation Survey

OKLAHOMA CITY, June 10.—The extent to which Oklahoma's oil industry can produce its oil and gas wells, transport the raw materials to processing plants, process, store or distribute the finished products at war-time levels will be ascertained in a survey being made by the Oklahoma Conservation Commission.

"We know this information is going to be needed in the national defense plan, so we are going to be ready," conservation officer Armstrong said.

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Standard of Indiana Loses Pan-Am Stockholders' Suit

N. P. N. News Bureau

NEW YORK, June 10.—Minority stockholders of Pan American Petroleum and Transport Co. won their suit against Standard Oil Co. of Indiana in a 190-page decision handed down June 8 by Justice Samuel I. Rosenman of New York Supreme Court. Defendants are considering an appeal.

Plaintiffs included the estate of Louis Blaustein, former president of Pan Am and founder of the American Oil Co., and Jacob Blaustein, a former vice president of Pan Am and son of Louis Blaustein, and companies controlled by the Blaustein interests. The Blausteins owned 20% of Pan Am stock, Indiana Standard, 78%.

The Blausteins charged that the Indiana Standard had subordinated Pan Am's interests to its own and had allegedly failed to go through its agreement to make Pan Am an integrated company.

Court found for the defendants in regard to contentions that Pan Am was not permitted to add a second unit at its Texas City refinery but instead had entered into a processing contract with Humble Oil & Refining Co.

In addition, Standard Oil Co. (N. J.) and its operating subsidiary, Standard Oil Co. of New Jersey (Del.), along with Walter Teagle, president of the Jersey company at time of filing suit (he is now board chairman), were also named defendants. But the court held that no case had been made out against these defendants.

Court held that defendants E. G. Seubert, Charles J. Barkdull, L. L. Stephens, Edward G. McKeever and James A. Carroll, Jr., all of whom were Indiana Standard officials, were responsible with the company as regards alleged failure to build Pan-Am. pipeline.

"It should be emphasized," the court stated at conclusion of its opinion and just before stating the relief granted plaintiffs, "that there is no claim and no finding, that any of the individual defendants profited personally in any of these transactions. The individual directors defendants are being held liable not because they received any part of the profits themselves or because they took over for themselves any business opportunities of Pan Am; but on the ground that they appropriated for Indiana (Standard) the transactions and profits herein discussed."

Court's decree ordered Indiana Standard to:

Account for and pay over to Pan Am profits made by Stanolind Oil & Gas Co. on all crude sold to Pan Am through Stanolind Crude Oil Purchasing Co. or otherwise since April 1, 1933 to date, which was produced from oil properties acquired by Stanolind subsequent to April 1, 1933 and prior to July 1, 1935, in the East Texas field and in the Gulf Coast area, excluding the Yount-Lee properties.

Transfer to Pan Am all oil properties acquired by Stanolind in the East Texas field or Gulf Coast area from April 1, 1933 to July 1, 1935, excluding the Yount-Lee properties, with Pan Am reimbursing the Indiana company for costs thereof or to pay Pa Am the reasonable value thereof.

Account for and pay over to Pan Am all profits from sale of crude oil from these properties during same period.

Account for and pay over to Pan Am all profits on crude purchased by the Indiana company or its subsidiaries and resold to Pan Am.

Account for and pay over to Pan Am damages for refusal to permit Pan Am to construct its own gathering system and pipeline from East Texas field.

* * *

Indiana Standard Appeal Expected to be Filed

N. P. N. News Bureau

CHICAGO, June 10.—Indiana Standard declined official comment on the New York decision in the Pan American Petroleum & Transport Co. stockholders suit but it was indicated that an appeal probably would be filed.

Estimates that "damages" involved in the case would amount to $50,000,000 or more were discounted. It was also pointed out that Indiana Standard, as a 78% stockholder in Pan Am, would be entitled to that proportion of any damages that might eventually be paid.

Defense Funds Voted

By Teletype

WASHINGTON, June 11.—House Appropriations Committee on June 11 reported a supplemental defense bill carrying $1,706,053,908 many millions above amount requested by President Roosevelt, and including $1,000,000 for National Defense Council and Advisory Commission on National Defense.

Industry Defense Bill Stymied in Congress

N. P. N. News Bureau

WASHINGTON, June 10.—Outlook for enactment of bill proposing an industrial defense corps to protect industrial plants and properties, including oil wells, refineries and pipe lines, against sabotage appeared doubtful here today.

Although the proposal, offered by Houston Chamber of Commerce and explained to Senate Military Affairs Committee by George A. Hill, Jr., president Houston Oil Co., was embodied in a bill, (S. 4105) determination of labor to oppose the proposal has stymied progress to the point of stalling any action on the bill at this time. Senatorial group which conducted the civil liberties study directed to industry ownership of arms, also frowned on the proposal to organize industry workers into a defense corps.

New Tax Bill Nears Passage, Starts July 1

(*Continued from page 9*)

hearings before Senate Finance Committee at which Government officials only, it appears, will be heard.

Corporation taxes in all brackets are raised a flat 1% with an additional 10% surtax based upon amount of tax payable also imposed upon these returns. Increases raise the 12½% rate applying to corporate incomes not exceeding $5,000 to 13½%; $5,000-$20,000 to 15%; $20,000-$25,000 to 17% and those exceeding $25,000 to 19% from present rate of 18%. These taxes are expected to produce $77,000,000 annually. The income and corporation taxes will apply to 1940 incomes.

As to the corporation tax increase, committee's report stated: "In view of the increase in the tax burden imposed upon individuals under the bill, it was believed that corporations should bear some part of the increased burden."

'Gas' Tax Extended for 5 Years

Bill provides for continuation until 1945 of the temporary import and excise taxes at the higher rates which either expire or would be reduced in 1941. Included in this category are the present excise taxes on lubricating oils, gasoline, transportation of oil by pipelines, import tax on petroleum, tires and inner tubes, automobile trucks, automobile parts and accessories, automobiles and motorcycles, etc.

C. F. Smith Succeeds F. W. Abrams as Head Of Standard of N. J.

N. P. N. News Bureau

NEW YORK, June 10.—Chester F. Smith is newly elected president of Standard Oil Co. of New Jersey (incorporated in Delaware), principal domestic operating subsidiary of Standard Oil Co. (N. J.).

Mr. Smith succeeds F. W. Abrams, who was elected to the board of the parent corporation at the latter's annual stockholders' meeting June 4.

The new president of Jersey's chief operating subsidiary has been with the company for 27 years.

J. Raymond Carringer has been appointed general manager of manufacturing operations and elected a director of the Delaware company, where his services in an advisory capacity will be available to the manufacturing management of Colonial Beacon Oil Co. and Standard Oil Co. of Pennsylvania.

George H. Mettam, manager of the Bayonne refinery, was named assistant general manager, and Harry G. Burks, Jr., assistant to the president. Mr. Mettam will remain in charge of the Bayonne plant and will maintain his office there.

Mid-Continent Plants Can Supply 80-Octane

N. P. N. News Bureau

TULSA, June 10—Mid-Continent independent refiners can meet all requirements of 80-octane Ethyl-branded gasolines but the increasd cost of producing this higher-octane motor fuel may be reflected in higher prices to jobbers and other resellers, according to market observers here.

Ethyl's new agreements (published in full text by NATIONAL PETROLEUM NEWS, June 3, 1940) raise the question of whether there will be an open "spot" market in 80-octane Ethyl-branded gasolines and, if so, will it mean a rearrangement of prevailing octane brackets.

Berry Co. Plans Undecided

OIL CITY, Pa., June 10.—Following sale of its 350,000-bbl. ocean terminal at Tiverton, R. I., plans of James B. Berry Sons' Co. for its New England operations have not yet been determined, according to Frank Berry, vice-president and sales manager.

"Our boston office is not being closed, however," Mr. Berry said, "and of course we'll continue to operate out of New York harbor."

National Petroleum News Engineering Survey Shows

FOR SAFETY'S SAKE

LUBRICATE EVERY 1000 MILES THIS SUMMER

COLORFUL WINDOW SIGN FEATURES NPN's 1000 MILE LUBRICATION CAMPAIGN

Big, attractive, colorful display signs, featuring the Summer Lubrication Campaign are available in quantity for marketers. These signs flash the important "Lubricate Every 1000 Miles" message to every motorist—at the same time they constantly remind salesmen, service station dealers and attendants to keep actively selling lubrication services this summer.

NPN recommends one poster in each window to display this message to your motorist customers . . and one or more signs INSIDE the station as a reminder to station salesmen. Signs printed in two colors. Size: 12¼ inches by 19 inches. Signs can be obtained from NPN in quantity at a low cost.

PRICES OF DISPLAY SIGNS

1 to 25 signs	9c each
26 to 50 signs	8½c each
51 to 100 signs	8c each
101 to 500 signs	7½c each

501 or more signs—special prices on application.

Remittance must accompany all orders for 500 signs or less. Ohio purchasers please add 3% state tax.

REPRINTS OF NPN's 1000 MILE LUBRICATION MATERIAL AVAILABLE . . . . . .

Reprints of Editorial material published in National Petroleum News are available for marketers for the use of salesmen, service station dealers and attendants. The material includes the editorial material published in this issue of NPN featuring the Summer Lubrication Campaign, together with other articles to be published in forthcoming issues.

This editorial material furnishes the basis for building strong sales messages and talks and every station should have individual copies for constant reference. Reprints in quantity can be obtained from NPN at low rates.

PRICES OF REPRINTS

1 to 25 copies	8c each
26 to 50 copies	7c each
51 to 100 copies	6c each
101 to 500 copies	5c each

501 or more copies—special prices on application. Remittance must accompany orders for 500 copies or less. Ohio purchasers please add 3% state tax.

—ORDER BLANK—

NATIONAL PETROLEUM NEWS, 1213 West Third Street, Cleveland, Ohio

☐ Attached is check covering the following order for NPN's Lubrication Campaign material.

☐ Please quote us on the following quantity of NPN Lubrication Campaign material.

_____ WINDOW SIGNS (Quantity)

_____ REPRINTS OF EDITORIAL MATERIAL (Quantity)

Company..... Individual.....

Street Address..... City, State.....

THE EDITOR'S PAGE

Readers Comments and Opinions will be much Appreciated by—WARREN C. PLATT, Editor and Publisher, Penton Building, Cleveland, O.

Fuel Oil Men Should Move To Guard their Freedom against "Dictator" Ickes

It is a fairly good bet that before many weeks the New Deal will begin a maneuver to restrict the use of fuel oil in order to save Secretary Ickes' new schedule of higher coal prices.

Nothing, of course, is certain these days but we say the above is a "good bet."

A few weeks ago word trickled into Congress that the White House was still much interested in its Roosevelt-Ickes oil control bill and last week Ickes said that he was "looking into" the oil industry's state of preparedness for national defense.

Then it has recently been reported in certain high labor circles that Roosevelt, as election day approaches, is more and more disturbed at "CIO" Lewis' anti New Deal attitude and is preparing to "give John something" and, this labor gossip says, the gift will be via the oil industry.

Lewis has not only been trying vainly to "organize" the oil industry but he is vitally interested in the success of Ickes' governmental effort to raise the price of coal through the new coal administrator who sits in Ickes' office. These new coal prices will have hard sledding unless something is done to retard the development of its more efficient competitor, Oil, hence the Roosevelt-Ickes oil control bill that, under the guise of "conservation", would give absolute control over production, manufacture and use of oil and gas to an oil administrator sitting in Ickes' office.

It was probably overlooked by most persons but in a footnote to the Madison oil case decision the New Deal Supreme Court remarked that a legal way to manipulate prices would be by Congress delegating power to "public representatives" as in the code days, through the Interstate Commerce Commission, the Securities Exchange Commission and "particularly as they relate to the fixing of minimum and maximum prices by the Bituminous Coal Commission." Then two weeks later the same court said that it was entirely legal for Congress to name a man in Ickes' office to raise and regulate the price of coal.

The stage seems to be all set. The new coal prices are about to appear and the New Deal is now about to do something as to the villain of the piece—the oil industry—that has been taking much business away from coal, both as fuel under steam boilers and domestic furnaces and particularly as power in internal combustion engines.

But the regulating firm of Roosevelt & Ickes does not have to wait for Congress to pass its oil control bill. Roosevelt can always issue a "war emergency proclamation" and then issue decrees to "conserve" oil under such emergency claim. Especially if Congress adjourns during this war defense crisis, our guess is that there is likely to be "emergency" proclamations and considerable restriction of the use of oil for next fall and winter in order to provide a larger market demand for coal and thus protect the higher Ickes prices that are about to be issued.

This oil industry is at as critical and as important a political crisis as it ever has met.

Every oil man should contact his representative and senator at Washington and ask that he get the facts as to just what Ickes is up to and to lay a protest against sacrificing the efficiency of the oil industry for the inefficiency of the coal industry and for Ickes proposed higher coal prices. Every man who markets fuel oil, every refiner and producer, is vitally concerned, to say nothing of the rest of the oil industry.

European totalitarianism may be getting ready to shove off for our shores but the oil industry has the threat of it right here and now with Roosevelt and Ickes trying to protect Ickes' dictatorship over the coal industry—and appease campaign contributor "CIO" Lewis.

Superfluity of Signs Bewilders Motorists

If oil marketing men do not do something pretty soon to reduce the number of and improve the appearance of gasoline and oil signs, the consumers will certainly act.

Today so many dealers and even company stations seem to believe that the more signs they display the more they are "advertising." The reverse has come to be the case, if anything. Driving into nearly all towns and cities on any important road route, one encounters such an accumulation of signs that one thinks of them as a vari-colored hedge of some sort, a row on each side. It requires all the faculties of a car driver to not miss all of the road signs it is necessary for him to read. The touring motorist is quite likely to miss some of those road signs because of the perplexing display of oil company signs.

Perhaps it is because of the great array of signs that may make the average service station attendant oblivious to them, and that keeps that attendant from asking you anything other than, "D'ya want regular 'gas'?" or "What oil do you want, 25c or 30c?" The writer, who does quite a lot of cross-country driving, does not recall when he last had a petroleum product called to his attention by its much advertised name, yet signs announcing oils, gasoline, plugs, batteries and tires, literally hedge the stations about. So far as these attendants are concerned there seem to be millions of dollars worth of national advertising that has gone to waste, except for the multitudinous and confusing signs.

Then there are signs that obviously do not tell the truth. They at present largely concern the "anti-knock" qualities of the fuel or its alleged "lead" content. Mostly these signs appear at price-cutting stations and they stand high and glaringly with their red paint above all competing signs.

The Chicago Motor Club is behind an ordinance to regulate station signs. The ordinance stands as approved by the city's gasoline retailers association. There undoubtedly will be laws proposed in other places to reduce the evil of too many, too ugly and too untruthful gasoline and oil signs.

The best thing would be for the industry to do a little regulating itself.

This Summer's Lube Sales Offer Opportunity To Teach Real Salesmanship to All in Oil Marketing

Wars may wage but what the oil marketing division of the oil industry has immediately with it, is the biggest selling opportunity in oil's history. From now until along in September there will be more gasoline and oil consumed in this country than ever before, as much as 7% or 8% more, it is conservatively estimated.

In supplying gasoline, the oil industry has a service job more than a developing selling job. But in furnishing the lubricating oil, the industry has a decided sales opportunity, for the average motorist does not have his car lubricated anywhere near as often as he should.

The quantity of gasoline consumed is determined by the ease of driving, the number and quality of roads and the desire and time and cash in pocket of the car owners. There is nothing much that the oil industry can contribute directly in any one season toward more driving. Maps, clean toilets, good service and fine products each contribute their share in the long run but no amount of "selling" by a gasoline seller can increase the mileage of the average car owner.

Yet, many a gasoline seller seems to forget all this. He seems to think he is "creating a market" by his sales or advertising effort. But, all such effort can possibly do, is to insure a company's getting its share of the normal increase in consumption and to seek to take some of the existing business away from a competitor. Price cutting and price selling do not create, to any measurable extent, larger consumption. They only get more motorists away from a competitor. The competitor's costs then go up and his profits down, so he retaliates and one of the industry's million price wars is under way.

How It Starts

So many of these oil men seem to think they are "entitled" to a greater growth in gasoline gallonage than the ordinary increase in consumption. And when another company fights back, generally a "major," the oil man is much put out that the major does not "live and let live."

This is not an argument on behalf of the majors but it is a plea for more common sense in viewing this gasoline market. The majors have set costs like a marketer or a dealer, and when their volume of business shrinks enough, their costs go up and their profits vanish. The majors use national advertising and many valuable sales aids to hold this business without cutting price, but if enough business is lost, the majors go after it by meeting the prices of competitors who took it away from them. There then is a "price war" which lasts until the national oil companies get back some or enough of its lost gallonage when prices may—but not generally—go back up. Often times a major, under the necessity of operating under the lower prices, has found further ways of cutting expenses, and then prices do not go back to their old levels.

'Economic Crimes' Listed

The economic crimes that the men in oil marketing are guilty of are:

First,—that they do not recognize that their sales efforts, whatever they are—whether national advertising or price-selling or price-cutting—do not CREATE a larger market, but only take business away from competitors who do not think they should give it up,—and

Second,—that in the competitive battle there is a tendency to use a low price instead of sound sales methods and the effective advertising and sales aids that so many oil companies provide,—and

Third,—that every marketer, big and little, strives so hard to increase his business more than the annual increase in consumption for his territory. We do not say that a marketing man should lay down on his job by any means; but we do say that when he goes after an increase in his business greater than the normal increase, he is seeking business that his competitors think "belongs" to them. That is generally an invitation to a real fight.

The successful marketer should first ask himself, "Is this additional business, above my normal territory increase, going to be worth the price? What will my competitors do when they finally wake up? Can I make more money going along as at present and with present prices than I can make with larger volume which probably will result in lower prices?"

It is profit and not volume that every man is primarily interested in; and yet so many oil men think that more volume insures more profit. So frequently it simply means less profit or more losses.

We have heard the familiar rejoinder to all this many millions of times, that the fault does not lie with the individual who is reading this, but with his competitor down the street, or with a major company or two—always with some one else. Price misconduct and other bad marketing practices are things that the average man so often becomes quite dishonest about without realizing it; he will not even admit such misconduct to himself. If you take each oil man at his word—refiner, marketer, dealer and major employe—then the industry is filled with nothing but saints who never cut the price. But if you take each man's testimony as to his fellow man, then they are all liars and price cutters.

For some reason the average man shirks and avoids his responsibility for his price. He ducks out on the fact that it is his own price that he is selling at and that it is his economic responsibility, to say nothing of his responsibility to his stockholders, to try and set his price at a profitable level and then to fight like everything to get that profitable price.

When it comes to price, so many average oil men want to lean on the other fellow and on his price. They want to sell "at or under the market" instead of on a price independently determined by sound accounting practices by each one.

So we repeat a statement to which some have taken exception, that such selling shows weakness and lack of backbone and an absence of selling courage. If one contributes positively toward getting that market up, sees to it that his price is not always "at the low" or even below, and if he sells on something other than "the low," whether it is refinery, tank car or cargo or barge market, tank wagon or at retail, then that oil man is taking responsibility for his own price.

In the sale of motor oil this summer there lies opportunity not only for greatly increased gallonage that actually is created by salesmanship, but there also lies a great opportunity to teach every man connected with oil marketing that he can sell without having a cut price.

For Car Owner's Good

Car owners do not buy enough lubricating jobs for their own good. The total number that they should buy for sound engineering reasons, is so far beyond the number of lubricating jobs the oil industry is now selling them, that we can forget about this point of saturation.

It is not whether a quart of oil costs the motorists 15c, 25c or 35c that determines whether the motorists should have an oil change, or even additional oil:—

It isn't whether a complete chassis lubricating job costs 50c or $1 or $1.50 or what, that decides the car owners.

What causes the car owners to make up their minds on lubrication is the degree to which they have been impressed by facts and sound argument that their cars actually need attention.

And the worst of it is that in so many millions and millions of cases each year the car owners are not even told these

reasons, not even asked to buy the much-needed lubrication.

Yes, and when we do ask them to buy some lubrication so many times we start right out with a cut price proposition.

With this issue NATIONAL PETROLEUM NEWS announces the inauguration of an INDUSTRY SALES CAMPAIGN to sell lubricating jobs for EVERY 1000 MILES a motorist travels. The immediate purpose of the campaign is to help the industry standardize on a practicable and proper car lubrication interval. The motorist has become more and more confused by the sales slogans of the car manufacturers who recommend all the way from 1000 miles to 10,000 miles. The motorist needs far more frequent changes of oil and application of the heavy lubricants than he has been getting. At the moment it would seem that by the industry adopting the "For Safety's Sake, Lubricate every 1000 Miles this Summer" slogan, there is a good chance of getting many more motorists than at present to adopt better lubrication practices. The details of this campaign are told in this issue, beginning at Page 25.

But what may be a more important outcome of the proper use of this lubrication campaign is that the industry will create a larger market by selling the lubricating idea, a thing which reiteration of a price alone won't do, whether the price is cut or a profitable one. The need for lubrication must be SOLD. The value of such lubrication to the car owner must be impressed on him. Then the quality and merit of the product must also be sold. all these must be SOLD long before the time comes to tell the customer the price.

Therefore the industry by driving hard on this "For Safety's Sake—Lubricate Every 1000 Miles this Summer" campaign will be doing far more than selling more lubricants. It will be teaching in the most effective way, which is by actual profitable practice, every man in oil marketing how to really SELL on the merits of the proposition and not on the per cent the price may be cut.

What this industry needs almost beyond all else, is to learn how to sell on the merit of the service and the quality of the products and without resort to price-cutting.

A proper use of this sales slogan will create more value to every oil company by the end of the summer in what the sales effort has taught each oil man, than all the dollars that any increased sales of lubes may represent.

Many oil companies have been spending millions of dollars in consumer advertising and in skilled sales aids and promotion men and material, but the great extent of price-selling and of price-cutting, the continued growth of volume by those selling on a price basis, shows that these valuable sales aids have been overlooked or even discarded by the men on the sales firing line, and by the immediate management of those men.

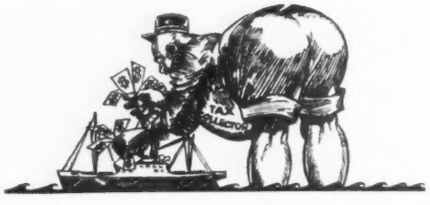
This summer's lubricating oil campaign is the industry's opportunity to teach its sales units how to use all these valuable sales aids, and how to create profitable business by other than just price.

If the proper educational work is done this Summer just on car lubrication alone, oil marketing will enter the Fall with such a different conception of the factors that sell, that there should be a much more constructive attitude toward the price of gasoline in all markets than exists at the present time.

Price alone will not sell more lubricating jobs this summer, but more SELLING of the need for lubrication and the quality of the products, will sell a considerably greater volume of business.

So "For Safety's Sake" of your own sales organization and your own profit, as well rendering much needed service to the car owners, get every man to selling the slogan "Lubricate every 1000 miles this summer."

OIL TAX NEWS



Impending Tax Hike Brings Buying Race

By Teletype

TULSA, June 11.—Mid-Continent and mid-western jobbers and marketers this week were poised for a quick buying thrust in the Mid-Continent that would see delivery of much of their summer gasoline requirements before effective date of increased federal gasoline tax, which is now expected to be July 1.

The gasoline levy is a manufacturers' tax, in that refiner acts as collector. Any gasoline that becomes property of the jobber prior to effective date of the new tax presumably would escape payment of 0.5c increase.

Jobbers were poised this week for the "big buying spree," some waiting for more definite word from Washington as to effective date of the increase.

Some jobbers were said to have obtained options on gasoline, while others reported they had already ordered out necessary requirements.

Mid-Continent refiners, for the most part, reportted they were booking orders for reasonable amounts of gasoline, based on the buyer's previous volume. Several said they were "going light on this speculative buying, especially those inquiries from outside sources."

Tax Diversion Voted In South Carolina

NEW YORK, June 10.—South Carolina's new method of diverting gasoline taxes—by increasing the tax for "general purposes" while at the same time decreasing the tax for "road purposes"—was successful last week when the legislature over-rode the Governor's veto of H-1309.

After the Governor had vetoed H-1309, the general appropriations bill, another bill, H-496 was cut short and the general appropriations bill inserted as text. New section 100 increases the gasoline tax 1c, the revenue from which will be used for general purposes, and reduces the tax 1c for highway purposes.

Income Tax Reduction Allowed on Gasoline

N. P. N. News Bureau

WASHINGTON, June 10.—Internal Revenue Bureau ruled again today that manufacturer's excise tax of 1c per gallon imposed on gasoline, by Section 2412 of the Internal Revenue Code, is deductible for federal income tax purposes by manufacturers, producers, or importers, since tax is borne by these parties.

In the same ruling, Bureau held tax of 4c per gal. imposed on gasoline by law of the Territory of Hawaii is deductible by the distributor since tax in this case "is a license tax imposed upon and payable by the distributor."

Georgia "Gas" Tax Collections up 6 Per Cent

ATLANTA, GA. — Revenue yield in May from Georgia's 6-cents per gallon gasoline tax amounted to $1,874,948, more than 6 per cent above May 1939 collections of $1,766,734, state officials reported.

Low Prices Hit By Dealer Head

N. P. N. News Bureau

WASHINGTON, June 8.—"You cannot grease a car for 50c, and you know it!"

With these words, directed at service station dealers, Louis Kimmel, business agent of Gasoline Merchants of Brooklyn & Queens, Inc., this week explained that low prices demoralize the man who makes reductions, as well as his neighbors.

Mr. Kimmel said: "You don't make any money on gasoline or oil. Every station man knows of these facts. You do not carry a line of accessories, nor a full line of tires. You cannot sell on time payments as the big operators do, nor can you make money on your grease and wash jobs. What is the result? Starvation. You are a business man with a 'gas' station, your customers think you are making money. . . You know that you have been in the red now for years. You have cut your living expenses—you have moved into cheaper quarters—you owe money to your supplier—you owe money to your tire man for as small an amount of tires as you may purchase—you owe money to your friends and relatives . . .

"It seems ridiculous that I have to write you so many times in this educational drive which is being conducted today so that you may enjoy a better and more profitable business."

OIL TRADE ASSOCIATION NEWS

'Trade Diversion' Rapped By Illinois Association

N. P. N. News Bureau

CHICAGO, June 8.—Instructions to prepare legislation "designed to correct the evils of wholesale retailing, and prohibit any manufacturer from selling to his employes any materials or products which he does not himself manufacture", were given to the legislative committee of the Illinois Assn. of Petroleum Retailers at the quarterly meeting held at Aurora, Ill., June 6.

Similar aims at "trade diversion", are being given national attention by Charles E. Yates, public relations counsel for the National Retail Furniture Assn., who is co-operating with the Cleveland Assn. of Petroleum Retailers. (NPN, June 5, 1940).

At the Illinois quarterly meeting, approval was given to a plan for direct membership in the state association, patterned after the plan of National Assn. of Petroleum Retailers.

Plans of the N.A.P.R. Chicago convention, to be held Aug. 20-22, were told by Edward H. Bayley. Both the Gasoline Retailers Assn. of Metropolitan Chicago and the I.A.P.R. are co-operating with the national organization in promoting the 1940 convention.

William Girling Elected

William Girling, Rockford, Gasoline Owners and Operators Assn., was elected vice-president to fill the unexpired term of H. H. Hiatt, who resigned recently because of other duties.

Robert Ballentine, Joliet, was employed for a 3-months sales campaign. He will cover the state with the aim of affiliating individual members and local associations in Illinois, with the state organization.

Legislative Committee Members

The legislative committee, appointed by Carl S. Johnson, president of the association, consists of Bradley M. Provis, Chicago, chairman; C. E. Reichelderfer, East Peoria; Mr. Girling, and Mr. Ballentine.

At the annual meeting of the I.A.P.R., to be held in conjunction with the N.A.P.R., Aug. 20-22, officers and directors for the coming year will be elected. Nominees will be presented before July 22, by a committee consisting of Warren Marshall, Chicago Heights; Frant Harnew, Oak Park; and Ed Bailey, Melrose Park.

South Dakota Group May Meet on July 1

YANKTON, S. D.—A summer meeting of South Dakota Independent Oil Men's Assn. jobbers has been suggested, according to J. E. Adrian, secretary. While the date remains uncertain, suggestions have been made that such a meeting be held July 1, or the day before the Belle Fourche Round-Up.

Washington Dealers Still In 'Woodshed'

WASHINGTON, June 10—District of Columbia gasoline dealers are still in the anti-trust "woodshed" of the Department of Justice with continuation today of the department's investigation of a reported "stabilization" plan here (NPN, May 29 and June 3, 1940). But prospect still holds that situation may be adjusted without resort to criminal indictments.

Dealers Talked 'Of Price Sign But Not Price'

N. P. N. News Bureau

CLEVELAND—Future of the small business man in all lines is endangered if the government persists in its action against Washington gasoline dealers' "stabilization" plan, according to John H. Donahue, Pittsburgh, in a letter to NATIONAL PETROLEUM NEWS in which he appeals for support of all dealer groups throughout the U. S.

The only mention of price at the Washington dealers' meeting on May 20, Mr. Donahue said, was the request that they take down their signs offering 2c discount off posted prices.

Text of Mr. Donahue's letter to N.P.N., follows:

June 7, 1940

National Petroleum News, Cleveland, Ohio.

Gentlemen:

Allow me to congratulate you on your issue of May 29, 1940. It was a revelation of what can be done in bringing the proceedings at Washington to the attention of the gasoline dealers in the United States.

We hope to have articles appear in other trade magazines and papers throughout the country asking support for our

Officers of Michigan Petroleum Assn. for 1940

DETROIT—Following are principal officers of Michigan Petroleum Assn. for 1940, elected at association's recent convention here:

PRESIDENT, J. F. Wilson, Huron, Mich., of Star Oil Co.—VICE-PRESIDENT, Leigh Morden, Lansing, Mich., of Morden Oil Co.—TREASURER, James E. Truesdell, Flint, Mich., of J. Austin Oil Co.—SECRETARY, John Jankoviak, Pinconning, Mich., of Suburban Oil Co.—EXECUTIVE SECRETARY, J. D. Hadley, Detroit. (Picture of Mr. Morden was not available).

J. F. Wilson

John Jankoviak

James T. Truesdell

J. D. Hadley

cause, and we are asking you to ask all interested dealers, associations, newspapers, periodicals and magazines to contact their Senators and Congressmen in an endeavor to bring this case to a successful conclusion.

Business all over the country is in a very precarious condition, and any effort by associations towards putting men back to work or paying increased wages can only come through stabilized market conditions.

The nation with millions of people out of work and living on the dole is being destroyed by the chiseler whose Un-American ethics have been the destruction of the life line. How can people be put to work and kept at work at profitable wages when there is no profit in business? Particularly to the small merchant and manufacturer who does 80% of the business in the nation, from small units worth less than $10,000.00.

If these small business men are compelled to desist from establishing fair trade practices to protect their interest, then the entire business structure of the country will be jeopardized.

The future of the small business men, gasoline retailers, etc., rests solely in his willingness to join associations and attend meetings that have his interests at heart. How else can he expect to maintain his position as the backbone of the nation?

Washington gasoline retail dealers appealed to John H. Donahue only after they had informed themselves as to his methods and after calling a meeting of retail gasoline dealers on May 20, 1940 at the Shoreham Hotel (at which 500 to 600 dealers were in attendance). The only reference to price was his asking them to take down their "2 cents off for cash" signs. The price on the pumps was 18 cents, and by taking down the signs, it only eliminated the "2 cents off for cash" signs.

For the life of me, I cannot see how an official at Washington was so agitated that he termed it illegal, immediately rushing to print, with remarks, that he could not possibly substantiate.

There is so much confusion in the law regarding price fixing and illegal combinations concerning associations. Why doesn't the department make a test case by injunctions instead of by indictments. This way all questions could be settled amicably instead of by prejudice.

Years of experience have shown that 4c a gallon is the lowest price at which gasoline can be pumped. The cost price on branded gasoline in all markets delivered to the pump by tank wagon, or tank truck, is the same and all suppliers charge that price.

The dealers in Washington, in order to keep their prices close to cut price stations, put up 2 cents discount for cash signs. This did not violate the law or the ethics of Washington officials, but as soon as the dealers wanted to discontinue this practice they were, to all intent and purposes, branded as criminals.

There is no doubt in our minds that you can be a great help to retail dealers if you will aid us in bringing this to the attention of all your readers.

Sincerely yours,
John H. Donahue,
Chairman.

Oil Can Meet War Demand, Survey by I.P.A.A. Shows

N. P. N. News Bureau

TULSA, June 10.—"The petroleum industry in America performed well during the last World War and it is prepared to do a much better job today," Frank Buttram, Oklahoma City, president of Independent Petroleum Assn. of America, said in prefacing a detailed report on the oil industry's preparedness in case of war.

"The 23 years that have passed since the U. S. entered the World War have brought many changes in the petroleum industry, as in others," the report said, adding "the technical advances have been so numerous as to transform the industry in every department."

Elaborating on this point, the report stated "a mere inventory of the industry at the time of the World War and in 1940 does not tell the story of the fundamental changes made in methods of finding and producing crude, of refining it into far better products . . . of the conservation policy evolved since the World War, of the huge tax bill of today contrasted to 23 years ago."

Huge Reserve Told

U. S. crude production totaling 1,264,256,000 bbls. in 1939 exceeded the total output during the 3-year World War period, the report stated. There were 189,399 producing wells early in 1917, with estimated underground reserves of 5 billion barrels the end of 1921, contrasted with the 380,893 wells at the end of 1939 and an estimated reserve of nearly 20 billion barrels of oil still underground.

Military and naval petroleum needs in 1918 were supplied by 267 U. S. refineries capable of processing 1,186,155 bbls. of crude daily. At present there are 453 operating refineries with total capacity of 4,430,979 bbls. daily.

Gasoline stocks at the end of 1918 totaled slightly more than 7 million barrels compared with present stocks of more than 100 million barrels.

Gasoline Yield Rises

Gasoline yield per barrel of crude processed has risen from 26% in 1918, to 45% last year. Cracked gasoline represented only 7.5% of total gasoline output in 1918, at present 48%.

Natural gasoline output, important in the manufacture of aviation gasoline, has increased enormously since the last World War, it was said.

"These figures indicate sketchily the enormously increased petroleum resources of this country," the report stated.

Report also discussed transportation developments since the last war, including inauguration of gasoline pipelines, extension of crude lines, and development of inland waterways and coastal facilities.

"So far as the national defense program is concerned," the report concludes, "the petroleum industry of today merely asks how much of a product is needed, where and when. Its enormous capacity for performance would not be exertetd to the full under any conditions that can be imagined."

Unbranded Dealers Oppose Chicago Sign Regulations

N. P. N. News Bureau

CHICAGO, June 8. — Sign ordinance opposition developed to the proposed ordinance regulating use of signs at filling stations at a hearing held by a sub-committee of the Chicago City Council here June 7. Original ordinance was sponsored by the Gasoline Retailers of Metropolitan Chicago and backed by motorist organizations.

The proposed ordinance limits the size of signs on gasoline pumps and provides penalties for displaying false or misleading signs.

Opposition came from the Chicago Independent Unbranded Petroleum Marketers Assn. and others operating a total of about 250 stations. They said the ordinance would eliminate the only advertising media which an independent, unbranded service station operator could afford. Advertising value of small signs specified to be displayed on the pumps would be nil, they said.

Bradley M. Provis, President of the Gasoline Retailers Assn., pointed out that the huge signs were "often misleading and certainly unsightly."

The independent group opposing the ordinance in its present form told NPN that they would support an ordinance eliminating misleading signs, but that total elimination of the price signs would seriously endanger their profitable operation.

ARE YOU AN ACTIVE OIL MAN, OR DO YOU JUST BELONG?

Are you the kind of oil man who would be missed
Or are you just another whose name is on the list?
Do you go to the meetings and mix with the flock
Or do you stay away to criticize and knock?
Do you push the cause along and help to make things tick
Or leave the work to just a few and talk about the clique?
Our industry's biggest problems might be solved today
If guys like you got busy and helped to lead the way.
There'll be meetings scheduled you're sure to hear about
And it may do you good to come and help us out.
Think this over, Mister, you know right from wrong,
Are you an active oil man, or do you just belong?

—*From Iowa Petroleum Industries Committee Bulletin*

Oil Transportation News

Latest developments in freight rates, legislation, regulations, and new construction affecting transportation of petroleum products by truck, barge, tanker, pipeline, and railroad.

Rails Propose Rates to Meet Texas Truckers

DALLAS, Tex., June 10.—Fight for truck-competitive Texas intrastate rates on petroleum shifted last week from the Lone Star State to Chicago as Western Assn. of Railroad Executives was called in to consider a proposal, which some roads said, would regain lost petroleum tonnage.

A proposal for reduced intrastate rates on petroleum was docketed and turned down recently by Texas-Louisiana Freight Bureau. Failing to receive necessary support from that bureau, several rails announced intentions of publishing a new scale of mileage rates patterned after the so-called Oklahoma-Kansas "truck-competitive" scale.

This rail-initiated proposal calls for a mileage scale that would result in reductions in point-to-point rates of as much as 11.5c a cwt. (0.759c a gal. on gasoline) below the so-called standard mileage scale in Texas. Truck-competitive Texas scale follows closely the Oklahoma-Kansas rates up to 275 miles. Above 275 miles, the differential maintained by the Texas truck scale over the Oklahoma-Kansas scale widens out to as much as 7c a cwt.

From most Texas refining points it is said the new rates would result in increased petroleum tonnage to the rails.

No definite date has been set for official W.A.R.E. consideration of the Texas scale.

Transportation Bill Buried Again (Maybe)

WASHINGTON, June 10.—Transportation legislation was declared dead for the present session of Congress with admitted failure this week of railroad labor organizations to agree among themselves and with key members of conference committee on the legislation.

A serious attempt has been made over the past 2 weeks to revive the measure (S 2009) since it was recommitted to conference by a decisive vote of the House several weeks ago; but developments this week foreclosed possibility of its revival at this session barring extensive prolongation of the session.

ICC Pipeline Bill Shelved

WASHINGTON, June 10.—Dust of Congressional pigeon holes began to gather this week on the bill (S 3753) proposing Interstate Commerce Commission authorization of pipeline construction or extension.

This measure is regarded as dormant unless current session of Congress is prolonged. However, it is due to be dusted off next session and pressed for passage under urgings of railroad labor and management.

'Dirty' Bottoms Fall Off 12c

By Teletype
N. P. N. News Bureau

NEW YORK, June 11.—"Dirty" tanker rates for Gulf-North Hatteras movement the past week fell off 12c from the peak reached May 17 of 62c for 30 gravity or lighter crude.

"Dirty" bottoms were said to be more plentiful than for some time past, and some boat men expressed the opinion that the fixture yesterday of 50c for light crude could be easily duplicated, although the boat was for immediate loading.

Little activity in "clean" coastwise movement was reported, with last paid "clean" rates remaining at 54c for gasoline, 57c for kerosine and 60c for No. 2 fuel. Charterers were said to be unwilling to pay more than 50c for gasoline, although few "clean" boats are open for chartering.

Activity of American-flag tankers in runs to Spain and Portugal over the past 2 weeks was evident in the chartering of 11 boats, 6 "clean" and 5 "dirty" for this movement. The 11 boats were chartered for 14 trips, 10 to Spain and 4 to Portugal.

Italian Tankers Turn Back

Three Italian-flag tankers, holding "clean" cargoes were reported to have steamed from the Gulf last week, but it is presumed they turned back following Mussolini's order for all Italian boats to pull into the nearest neutral port.

Drives 675,000 Miles without Accident

N. P. N. News Bureau

CHICAGO, June 10.—While A. W. Kammeyer, Concordia, Mo., agent for Standard Oil Co. of Indiana, did not actually drive 28 times around the world, in the past 18 years, he's driven more than its equivalent: 675,000 miles—and without a single accident.

For this accomplishment, the National Safety council of Chicago, has declared him winner of the safe drivers' contest for tank trucks. Mr. Kammeyer also won the safe drivers' contest for tank trucks at the International Petroleum exposition at Tulsa.

Jersey Standard Seeks to Transfer Tankers

WASHINGTON, June 10.—Standard Oil Co. of New Jersey today asked U. S. Maritime Commission approval for sale of 3 tankers to Panama Transport Co., Panama City, Panama, and transfer to Panamanian registry of the vessels. It involves the following tankers:

Name	Where & When built	Gross Tons	Net Tons	Length (Feet)	Speed
T. J. WILLIAMS	Tampa 1921	8,211	5,108	465.4	10½ knots
GEORGE G. HENRY	San Francisco 1917	6,265	3,849	435	10 knots
JOHN WORTHINGTON	Vancouver 1920	8,166	5,155	462.4	10½ knots

Tanker Probe Quiet

WASHINGTON, June 10.—Inquiry at the Capitol today disclosed an "all quiet" situation on the tanker probe conducted by the Hart Subcommittee of House Merchant Marine and Fisheries Committee.

No further meetings have been held by the Hart group since closing of hearings in executive session some weeks ago and no further meetings are slated at this time. Next action in this situation calls for a report to the full committee on the survey of this situation by the subcommittee, but when this will be forthcoming, was not indicated.

ICC Calendar

Decisions

Clare M. Marshall, Rouseville, Pa. (MC 73855, Sub. 3) Permit granted (upon compliance with certain conditions) to operate as a contract carrier of petroleum from specified points in Pa. and Ohio to designated territories in Ohio, N. Y., and W. Va., and of such petroleum products as may be refused or damaged from points in those territories to points of origin.

Hearings

W. Bye, Milk River, Alberta, Canada. (MC 101347) June 27, Shelby, Mont. on contract carrier application to transport petroleum products in Mont. and Canada.

Wm. Jefferson Black, Oilmont, Mont. (MC 44050, Sub. 1) June 27, Shelby, Mont. on application to extend operations as a common carrier of petroleum and products in Mont. and Idaho over irregular routes.

Hight's Truck Line, Louisburg, N. C. (MC 101500) June 27, Raleigh, on common carrier application to transport petroleum products in Va. and N. C. over irregular routes.

Clay's Transfer Co., Rock Mount, N. C. (MC 31809, Sub. 1) June 29, Raleigh, on common carrier application to transport petroleum products in Va. and N. C. over irregular routes.

R-B Freight Lines, Inc., Aberdeen, S. Dak. (MC 101299) June 29, Aberdeen, on contract carrier application to transport petroleum and products in Mo., Iowa, Nebr., Kans., Wyo., S. Dak., N. Dak., Minn. and Mont. over irregular routes.

T. E. Collins, Shreveport, La. (MC 66294, Sub. 4) July 1, Shreveport, on application to extend operations as a common carrier of natural gas and petroleum in La., Ark., Tex., Miss., and Ala., over irregular routes.

H. A. Schult Co., Brooklyn, N. Y. (MC 92330) July 1, Brooklyn, on application to extend operations as a common carrier of hot asphalt in tank trucks in Conn., N. Y., N. J., and Pa. over irregular routes.

Eber W. Martin & Son, Benton, La. (MC 59303, Sub. 2) July 2, Shreveport, on application to extend operations as a common carrier of oil field equipment in La., Tex., and Miss. over irregular routes.

'Trainload' Proposal Not Yet Before ICC

N. P. N. News Bureau

WASHINGTON, June 10.—Interstate Commerce Commission has not received any formal proposal so far calling for trainload rates on gasoline from Southwestern refining points to Midwestern markets as has been under discussion between oil traffic and railroad managers for some time, inquiry at ICC today disclosed.

Oral arguments in the Petroleum Rail Shippers case wherein Examiner Stiles recommended such rates remain cancelled but subject to assignment at a later date if proposed voluntary volume rates are not forthcoming.

Commission on May 31 suspended proposed reduced rates on petroleum products from pipeline terminal points in the Midwest to markets within short haul radius. Southwestern refiners opposed reduction of these distribution rates to compete with motor trucks upon grounds that they had not been accorded similar relief in their pipeline competitive rail rates to these terminals.

So far as ICC was advised today, railroads have taken no definite action looking to promulgation of volume rates on gasoline. Oil traffic circles have been expecting such a move from the Rock Island and the Missouri-Pacific.

D. C. 'Gas' Tax Receipts Up

WASHINGTON—District of Columbia gasoline tax receipts in April totaled $258,241, officials report, about 8 per cent above yield in April last year of $238,158, under the tax of 2-cents per gallon.

New Wage-Hour Rule Urged by Oil Groups

N. P. N. News Bureau

WASHINGTON, June 10. — Revised Wage-Hour definitions covering "executive," "administrative," and "professional" workers proposed to Wage-Hour Division in joint presentation by oil producers and refiners will clarify and simplify border line cases now confusing the industry.

This explanation was offered NATIONAL PETROLEUM NEWS here this week by an informed oil man following hearings June 4 and 5 concerning these definitions as to manufacturing and extractive industries.

Question of effect of proposed definitions upon a small company as against a major company is not involved, it was pointed out, since definitions fall with equal weight upon all companies.

It was apparent from comprehensive proposal offered by petroleum producers and refiners that many employes now within the classifications of executive, administrative and professional type of work would be exempt if revisions are accepted.

The oil industry's case was presented in the main by Clarel B. Mapes, Tulsa, executive secretary of Mid-Continent Oil and Gas Assn. A comprehensive brief summarizing the proposals will be submitted later.

The revised definitions proposed by the oil interests as amendments to Section 541.1 and Section 541.2 of regulations issued under Section 13 (a) (1) of the Fair Labor Standards Act of 1936 follow:

"SECTION 541.1 EXECUTIVE

"The term 'employe employed in a bona fide executive . . . . capacity' in section 13 (a) (1) of this Act shall mean any employe whose primary duty is the management of the establishment, or a customarily recognized department thereof, in which he is employed; or who customarily and regularly directs the work of other employes therein; or who has the authority to hire and fire other employes, or whose suggestions and recommendations as to the hiring and firing and as to the advancement and promotion or any other change of status of other employes will be given particular weight; and who customarily and regularly exercises discretionary powers; and whose principal duties are dissimilar to those performed by non-exempt employes of the employer; and who is compensated for his services at not less than $30.00 (exclusive of board, lodging, or other facilities) for a workweek."

"SECTION 541.1a ADMINISTRATIVE

"The term 'employe employed in a bona fide . . . administrative capacity' in section 23 (a) (1) of this Act shall mean any employe who is compensated for his services at not less than $30.00 (exclusive of board, lodging or other facilities) for a workweek, and

"(a) whose primary duty is to manage, direct or superintend any group of employes; or

"(b) who in the course of his regularly assigned duties has power or authority to bind his employer, or has charge of his employer's property or goods or any plant, warehouse or other unit used for storage or distribution thereof; or

"(c) who is customarily and regularly engaged in work

"(1) of such character that the employer is interested only in the results obtained, and

"(2) requiring the consistent exercise of such employe's discretion and judgment as to the manner or time of performance, and

"(3) of such a character that the time required for the output produced or the result obtained cannot be foretold; or

"(d) who immediately, directly and regularly assists an executive, professional or other administrative employe (as herein defined) in the performance of his duties, such assistance requiring the exercise of independent judgment and discretion, although it may be partially routine or clerical."

"SECTION 541.2 PROFESSIONAL

"The term 'employe employed in a bona fide . . . . professional . . . . capacity' in section 13 (a) (1) of the Act shall mean any employe who is compensated for his services at not less than $30.00 (exclusive of board, lodging or other facilities) for a workweek, and who is customarily and regularly engaged in work

"(a) predominantly intellectual in character as opposed to routine mental, manual, mechanical, or physical work, and

"(b) requiring the consistent exercise of discretion and judgment both as to the manner and time of performance, as opposed to work subject to active direction and supervision, and

"(c) of such a character that the output produced or the result accomplished cannot be standardized in relation to a given period of time, and

"(d) based upon educational training, either in school or through experience, in a specially organized body of knowledge as distinguished from a general academic education and from an apprenticeship and training in the performance of routine mental, manual, mechanical, or physical work."

Wage-Hour Act Drive Launched

N. P. N. News Bureau

WASHINGTON, June 10—The lumber industry was picked today by the Wage-Hour Division of the Labor Department to bear the brunt of division's first nation-wide drive for compliance with the Fair Labor Standards Act. Announcement said to be of interest as indicating division's technique in driving for enforcement of the Wage and Hour Law.

"This drive is not primarily a punitive campaign," Col. Philip B. Fleming, administrator, announced. "It is carried out in accordance with the policy of the division of co-operation with all those who show willingness to come into compliance. Where such willingness is not present, legal steps will be taken to require compliance."

The Administrator further declared that "the first aim of the drive is the elimination as excuse on the part of a violator of the factor of claimed ignorance." Determination was expressed to visit every sawmill or lumber yard to determine compliance with the law.

Resort to a procedure comparable to that employed against oil produced in excess of state proration orders, was indicated. Division intends to invoke the "hot goods" clause of the Fair Labor Standards Act to prevent shipment in interstate commerce of goods in violation of the law.

Roads Bill Passes

N. P. N. News Bureau

WASHINGTON, June 10.—Federal government will provide $178,500,000 for road building program with states in each of the fiscal years 1942 and 1943 under the Cartwright bill (H. R. 9575) as it passed the House.

This compares with $191,000,000 allowed for 1941 fiscal year beginning July 1, 1940 and reflects threat of President Roosevelt to veto bill carrying increased sums for this purpose.

Bill carries identical sums for both the 1942 and 1943 fiscal years, including $93,750,000 for state highways built with Federal-aid funds, $18,750,000 for secondary roads, $37,500,000 for elimination of grade crossings, and varying amounts for forest roads, roads in public lands, in national parks, Indian Reservations and parkways.

Magnolia Expands Plant

DALLAS, June 10.—A rehabilitation and expansion program for its Fort Worth, Texas refinery has been announced by Magnolia Petroleum Co.

Plant will be modernized and the Kellogg cracking unit expanded, it was said. Expansion program will double gasoline output of the plant, which now has a capacity of 5800 bbls. of crude daily and 3500 bbls. daily cracking capacity. It is estimated the project will cost $2,000,000.

Magnolia officials denied reports that the expansion program was for the purpose of increasing yield of aviation gasoline. "We are just trying to supply the increased demand for our gasoline in this territory," one official said.

By ALLEN S. JAMES

Around

The Mid-Continent

Oil's Story Told 135 Times To Public in St. Louis 'Show'

The program being sponsored currently by the St. Louis Chamber of Commerce to tell the public in its trade area the interesting story of the oil industry is one of the best of its kind we have encountered.

Much of the success of this public relations effort is due to the work of H. H. Anderson, vice president of Shell Oil Co. Inc., acting chairman of the Chamber of Commerce speakers' bureau, who has actually presented the program many times before civic and business organizations.

With the Illinois oil fields almost at St. Louis' side door, the chamber's oil committee undertook the program as one of its projects. President Alexander Fraser of Shell, a director of the Chamber, is chairman of that organization's oil committee.

Stand on Chairs

We had the pleasure of seeing Mr. Anderson give the program a month or so ago before the Rotary club at Evansville, Ind. We have been around the oil industry for a number of years, and had just been "through" the Illinois oil fields, yet that program reached out, caught our interest and held it. No wonder those business and professional men, including a number of other oil men, were on the edge of their chairs, with many of them standing in the chairs, the better to see and hear!

The program has been given 135 times before various civic organizations and oil industry gatherings, with total attendance running over 15,000. In addition, there is the untold thousands in the radio audience who have heard it in one or more of the 67 broadcasts.

Average attendance is over 100. That means that by the time the schedule is completed many thousands of business and professional men—the type that are classed as civic leaders—will have seen and heard about oil in Illinois and oil in general. These are the rank and file of citizens, those who know there is an oil industry, but know little about it. They are the type the oil industry should strive the hardest to interest in its story.

The program is in two parts. The first part is a sound motion picture that tells in an unusually interesting manner the story of oil geology production, pipelining and refining.

Then follows a short talk, crammed full of interesting data about the current oil activity in Illinois, and about the current oil industry throughout the nation. The story is told in language a layman can understand.

Points to Salem

Specific examples are cited. Salem, Ill., is one.

"More than 100 substantial new homes have been built," the prepared speech reads, "including many constructed in the field by the oil companies." (The speakers keep in constant touch with the situation in Illinois, and are constantly revising the prepared speech to keep it up-to-date.)

"Retail business licenses have tripled," the speech continues, "for your average oil company workman is a fine type, well-paid, and liberal spender . . . "

"To the people of Illinois and adjacent areas . . . the most important thing about the oil boom is its economic aspect. What does it mean to them in dollars and cents?" Let's look at first through the industry's eyes:

"Every day it produces oil that sells for approximately $450,000;

"Every day it spends $85,000 to lift this oil to the surface;

"Every day it spends $120,000 to run the drilling outfits, and

"Every day it spends $10,000 as rentals on 6,000,000 acres of land held under oil leases."

What the boom means to the average citizen is told.

"The bulk of the oil activity is in eight Illinois counties," the speaker tells his audience, "and it has spurred other activity by leaps and bounds.

"Looking at the total figures for the 8 counties, we find some startling changes in the three years since oil was found:

"Retail sales tax collections have increased 112%;

"Postal receipts in 20 towns have increased 52%;

"Sales of new automobiles have increased 84%;

"Bank deposits have increased 49%, while bank loans have increased only 15%.

"For every acre of proven oil land, another 100 acres have been leased by the oil companies. Hundreds of farmers outside the actual fields have paid off farm mortgages with the bonus money handed them when their leases were signed or by prospective royalties sold while wildcatting was in progress.

"The boom has given transportation companies a 'shot in the arm.' From increased oil and oil supply freight revenue alone, one railroad was taken out of receivership and another was lifted out of 'the red.' Another line in one year from one field received nearly $500,000.

Tells Oil's Story to Business Men

Typical of the more than 100 audiences which have heard the oil presentation of the St. Louis Chamber of Commerce is this group of business men interestedly listening to H. H. Anderson, St. Louis, vice president of Shell Oil Co., Inc., who has made the presentation many times

S.A.E. Hears Army Man Tell of Defense Needs

(*Continued from page 9*)

ticularly the S.A.E. Ordnance Advisory committee which has collaborated with the Ordnance department for many years and had considerable part in developing the present light tank which was exhibited at the meeting. Particular stress was laid upon simplification of automotive equipment problems through standardization and interchangeability of essential parts and units.

The present choke point in aircraft production, and for many months to come, was said to be engine production of the higher horsepower ratings. The Aeronautical Chamber of Commerce was quoted as saying we should reach 25,000 engines a year from existing sources by the late fall of 1941. Questions were raised as to whether automobile engine firms could deliver at an earlier date, whether machine tools of certain types will be the limiting factor, whether there will be enough skilled labor.

Strategic Materials Discussed

In the matter of strategic materials not available as native natural resources, particularly rubber, manganese, tin, chromium, and tungsten, accumulation of a year's reserves was recommended. It was pointed out that "there is sentiment in Congress (the House has already passed a bill) to license and control exports of essential commodities with fair prospects of favorable action."

Referring to the Industrial Mobilization Plan, Mr. MacMorland said the present program will not require its invocation, and that co-operation rather than compulsion accords best with American tradition as the proper way to develop our munitions strength. He said "compulsion never worked very well in the World War, whereas there are numerous examples of great results with co-operation". The steel industry co-operation in reducing the price of steel was cited as an example during the last war.

Foreign orders for military equipment at present was said to total about $1,000,000,000 of which about 90% was for aircraft. Such orders, he said, complicate our own procurement program. "While the pressure is not yet very great on our facilities for military equipment, other than aircraft, my own forecast is that demand will increase." Confidence was expressed that our industrial structure will stand the impact of a preparedness drive even greater than that of 1916.

Refiner's Problems Discussed

At the opening session of the S.A.E., Monday morning, William H. Hubner, Ethyl Gasoline Corp., reviewed the refiner's problems in producing automotive gasolines on a mass production basis which will be satisfactory in many types of engines operating under widely different driving conditions.

The future engine design trends will be toward smaller size, higher compression ratios, yielding higher power output and greater fuel economy, and requiring fuels of higher antiknock properties, Mr. Hubner said. "It is not unlikely that, by 1945, road octane values will reach a level of 95 for premium grade and 85 to 90 for regular grade fuels."

"Catalytic cracking and reforming appear to have heralded a new era in refining methods. The trend is definitely toward the use of catalysts, whether in cracking and reforming (as in Houdry processes—Ed.), polymerization (as in U. O. P. poly units—Ed.), or alkylation operations, with good reasons to believe that present high costs will be reduced. The fuel of the future may be a blend of catalytically cracked and reformed gasolines and alkylate, with tetraethyl-lead or other antiknock compounds added. The need for anti-knock compounds may be strictly economic or it may be the means of maintaining uniform quality which is so necessary for satisfactory customer acceptance."

"It seems probable that in the future more emphasis will be placed on improving economy as well as on improving performance. . . . Although the trend has been toward more volatile fuels, apparently a leveling-off point has been reached." The importance of low gum content and good storage stability was stressed. Sulfur content was said to becoming less important as far as corrosion problems are concerned, and reduction in sulfur is largely a problem of economies of producing high octane fuels.

Cause of Valve Trouble

During the Tuesday morning session, A. T. Colwell, Thompson Products, Inc., discussed valve stem deposits which were said to be the cause of over half of all valve troubles. Although he said these were traceable to fuel and oil, the solutions to the problem which he suggested were largely in engine design details and oil flow control since "any oil will oxidize or decompose at some temperature occurring along the valve stem." Least trouble is experienced, however, with oils of good oxidation resistance.

Efforts are being made to determine to what extent tests of aircraft engine lubricating oils in the C.U.E. engine (Cooperative Universal Engine Design for Aviation Engine Single-Cylinder Research) can be substituted for tests in multi-cylinder aircraft engines. Since the operation of existing installations differ widely in power, oil consumption, fuel consumption, and operating temperatures, attempts are being made to find means for producing comparative data from these engines.

A. L. Beall and M. H. Young, Wright Aeronautical Corp., reported at the request of the Aircraft Engine Lubricants Research committee that a study of these installations "shows quite definitely that no 2 of the units as now set up are likely to provide comparative data." He recommended the committee meet to decide on a course of action.

Barnard to Talk

On Thursday D. P. Barnard, Standard Oil of Indiana, and R. B. Cragin, M. W. Kellogg Co., will recommend aviation fuels of the aromatic type, produced by catalytic cracking and catalytic reforming, as offering greater possibilities than processes such as selective polymerization, alkylation, and isomerization for producing the generally preferable paraffinic type fuels. Quick production of large quantities of high-octane aviation fuel at low cost is the inducement offered aircraft engine designers for producing an engine which will get the most out of the aromatic type fuel.

Aromatics in general show a 5% to 7% reduction in heating value on a weight basis as compared with paraffinic type fuels, it will be pointed out. To the aircraft engine designer, this may be considered equivalent to a higher octane requirement for the aromatic type fuel in order to make possible comparable specific fuel consumption. The authors admit that there is no certainty that a suitable engine can be built but ask the aircraft engine researcher to answer so that petroleum chemists can more effectively direct their efforts.

Questions on Aircraft

The position of the refiners was summed up by the framing of 6 questions which aircraft engine designers and users were asked to answer:

"1. What are the *necessary* properties of a high flash fuel from the standpoint of ASTM distillation, flash point, octane number and heating value?

"2. Does the aviation industry really want high flash fuels?

"3. How quickly will the industry require large quantities of high flash fuels?

"4. Can the industry pay a premium for such fuels?

"5. Can the aircraft engine manufacturer design an engine to take advantage of the octane number 'sensitivity' of aromatic type fuels?

"6. Can a 'tolerance' in reduced heating value be established in terms of compensating octane number or compression ratio increases?"

Bell Oil Expands In Illinois Field

N. P. N. News Bureau

TULSA, June 10.—An extensive drilling campaign in the Boyleston area, Wayne county, Illinois, has been started by the Bell Oil and Gas Co., according to M. L. Freese, vice-president.

Mr. Freese confirms reports that "Bell has secured a loading rack site on the Southern Railway at Boyleston, and will build a pipeline, if necessary, into the area to take production from its leases and other properties in the event that other pipeline facilities are not adequate to handle the amount of crude necessary to be taken from the properties to protect them from the offset acreage."

Oil Burner Shipments Rise

N. P. N. News Bureau

WASHINGTON, June 10.—January-April shipments of oil burners by 170 American manufacturers totalled 51,649 units, Census Bureau reports, compared with 37,723 in same period of 1939 and 27,061 in 1938. In April 14,394 burners were shipped as against 10,640 in April 1939. Statistics refer to burners used for heating large buildings and in industrial process equipments, etc.

U.S. 'Gas' Demand Up 8% Exports Drop in April

N. P. N. News Bureau

WASHINGTON, June 10.—Domestic demand for motor fuel in April totaling 47,683,000 bbls. was 8% above demand in April, 1939 while exports of 2,075,000 bbls. during the month were 43% under shipments in April 1939, U. S. Bureau of Mines reported today.

"Evidence that refiners are trying to maintain a better balance between gasoline and heating-oil yields was again indicated in April," the Bureau stated. While gasoline yield rose 0.8% to 43.0% it was 1.8% below April 1939.

"Although daily average crude runs to stills picked up somewhat and crude-oil production fell off slightly," Bureau commented, "imports were higher and the rate of accumulation of crude-oil stocks showed little change. Nearly 7,000,000 bbls. were added to refinable stocks in April, bringing the total to 258,066,000 bbls. on April 30."

"The domestic demand for motor fuel in April reached expectations but exports continued far below estimates," Bureau's report pointed out. "Not much of a dent was made in the top-heavy gasoline inventories in April, usually the first month of the seasonal withdrawal."

Finished gasoline stocks increased in April. Stocks of unfinished gasoline declined, but this was outweighed by a gain in natural-gasoline stocks, report continued.

Aviation 'Gas' Stocks

Aviation gasoline stocks totaling 3,872,000 bbls. were included in the 96,615,000 bbls. of finished gasoline stocks on April 30. This figure was 15,000,000 bbls. higher than a year previous.

Demand for fuel oils "fell off materially" with the approach of warmer weather, Bureau reported. "Comparatively modest" was description applied to increases of 11% in demand for kerosine, 12% for distillate fuel and 8% for residual fuel in April over same month a year ago.

Price index for petroleum products in April 1940 was 50.4, compared with 50.4 in March 1940, and 51.9 in April 1939, Bureau pointed out in citing U. S. Bureau of Labor Statistics index.

Crude Output Drops

"Crude-oil production in April receded slightly from the record level of March, daily average being 3,868,200 bbls., or 5200 bbls. below the average in March but 351,200 bbls. above the average of April 1939, according to Bureau.

"The outstanding change in the state figures of production was the decline in Illinois from the peak of 438,100 bbls. daily in March to 430,400 bbls. daily in April. Production in Texas and Oklahoma showed slight declines, but gains in California and Louisiana about compensated losses in Kansas and New Mexico."

"A new record" was achieved for coastal Louisiana in the output recorded during month of 226,200 bbls. daily, Bureau reported.

Texas Issues New Order

AUSTIN, June 11.—A new proration order returning allowed production in the big East Texas field to 2.32% of potential production, increasing Panhandle allowables and lopping off allowable production in certain Gulf Coastal fields is to be issued about June 19, according to Texas Railroad Commissioners Smith and Sadler.

New order is a direct outgrowth of recent Supreme Court ruling upholding Texas Commission's order based on 2.32% of potential in the Rowan-Nichols Case.

New Gasoline Put Out By California Standard

SAN FRANCISCO, June 10—Standard Oil Co. of California announces "the best Premium Gasoline we have ever made, Standard's Supreme Gasoline (with Ethyl)." The new product replaces "Standard Ethyl Gasoline."

DEATHS

James M. Burchett

James M. Burchett, Fort Smith, Ark., died April 30. He was supervisor for the Northwestern Arkansas territory of Lion Oil Refining Co., and had been with this organization since Nov. 16, 1935.

* * *

D. D. Barris

D. D. Barris, Lepanto, Ark., agent for Lion Oil Refining Co., died May 15 at his home. Mr. Barris had been with the company since March 25, 1935.

* * *

Charles D. Berry

Charles Dufur Berry, 57, treasurer of the James B. Berry Sons Co., Inc., and the Quaker State Oil & Refining Corp., died at his family home in Oil City, Pa., June 5, after a lingering illness.

Mr. Berry, son of the late Mr. and Mrs. James B. Berry, was born in Oil City June 15, 1882, and received his education in local schools and at Washington and Jefferson College.

Two years after graduation he entered the employ of the James B. Berry Sons Co., with which he was associated up to time of his death.

Mr. Berry is survived by his wife, the former Carlotta Smithman; a son, Charles, and two daughters, Elizabeth and Virginia. He also leaves a brother, James D. Berry.

* * *

Asa D. Morton

Funeral services for Asa Dan Morton of Los Angeles and formerly of Tulsa and Bartlesville, Okla., veteran Mid-Continent oil operator, were held at Los Angeles June 6. Mr. Morton was active in development of the Panhandle oil and gas field and helped define the limits of the East Texas field. He died June 4.

* * *

John George Neubauer

John George Neubauer, 87, former president of Solar Refining Company of Lima, Ohio, died of heart disease at his home in Elmhurst, Queens County, N. Y.

Mr. Neubauer was born in Schenectady, N. Y., and began work as a clerk for the Standard Oil Company in Long Island City. In 1886, he was transferred to Lima as an auditor of the Solar Refining Co., a subsidiary, which now is in the Standard Oil Co. of Ohio. Mr. Neubauer had been president of the company for some years when he retired in 1923.

Shell Headquarters Will be Transferred To New York in Fall

ST. LOUIS, June 8.—Shell Oil Co., Inc., is planning to move its administrative headquarters from St. Louis to New York, so that management of its operations—east of the Rocky Mountains—will be consolidated. The move is expected to take effect this fall.

Since local offices for the Middle West were established in St. Louis in 1919, the company's activities have gradually spread to the East and now embrace the entire Eastern Seaboard, the Shell announcement pointed out.

Shell's central marketing division headquarters will be continued in St. Louis in Shell Building as at present.

"In addition to its divisional marketing headquarters," the announcement said, "Shell will also continue to be actively identified with St. Louis through its Wood River refinery, which, as a result of a recent extension program, is now the largest and most modern of the several Shell refineries in this country. The Wood River refinery has about 3,000 employes on its payroll.

"St. Louis will also continue as the center of an extensive transportation system for refined products by rail, truck, pipelines, and by barge shipments on the Mississippi and its tributaries."

'Gas' Stocks Drop 882,000 Barrels

By Teletype
N. P. N. News Bureau

NEW YORK, June 11.—For the first time in 12 weeks, total stocks of finished and unfinished gasoline in U. S. dropped below the 100,000,000-bbl. mark as American Petroleum Institute today reported reduction of 882,000 bbls. to 99,471,000 bbls. in gasoline inventories during week ended June 8.. With exception of Texas-Gulf and North Louisiana - Arkansas, where inventories showed slight increases, all districts of the country shared in the reduction. Gasoline production decreased 166,000 bbls. to 11,627,000 bbls., and crude runs to stills were reduced 50,000 bbls. to daily average of 3,600,000 bbls.

Stocks of gas oil and distillate fuel oil increased 1,076,000 bbls., while stocks of residual fuel oils decreased 102,000 bbls.

Greater share of increase in stocks of distillate fuel oils was at Texas and Louisiana Gulf and California.

Latest Oil Industry Statistics

Trends of Basic Figures

	June 8, 1940	June 1, 1940	June 10, 1939
Crude Production (Bbls. daily)	3,816,950	3,749,050	3,376,950
Crude Imports (Bbls. daily)	107,710	168,000	154,857
Crude Runs to Stills (Bbls. daily)	3,600,000	3,650,000	3,510,000
Gasoline Stocks (Bbls. total)	99,471,000	100,353,000	82,716,000
Gas Oil & Distillate Stocks (Bbls. total)	30,609,000	29,533,000	29,357,000
Residual Fuel Oil Stocks (Bbls. total)	104,666,000	104,768,000	111,239,000

Weekly Changes in Crude Oil Stocks*

(Thousands of barrels)

Grade or origin	May 18	May 25	June 1	Change from May 25
Pennsylvania Grade	4,474	4,471	4,469	— 2
Other Appalachian	1,161	1,167	1,158	— 9
Lima-Michigan	1,595	1,561	1,564	+ 3
Illinois-Indiana	20,827	21,026	21,023	— 3
Arkansas	3,118	3,110	3,191	+ 81
Kansas	7,794	7,869	7,827	— 42
Louisiana:	11,472	11,522	11,900	+ 378
Northern	4,032	4,274	4,349	+ 75
Gulf Coast	7,440	7,248	7,551	+ 303
New Mexico	6,967	6,951	6,991	+ 40
Oklahoma	63,397	63,576	63,871	+ 295
Texas:	81,475	82,885	84,349	+1,464
East Texas	18,528	18,907	19,426	+ 519
West Texas	18,988	19,189	19,368	+ 179
Gulf Coast	19,884	20,729	21,130	+ 401
Other Texas	24,075	24,060	24,425	+ 365
Rocky Mountain	16,896	16,544	16,432	— 112
California	35,856	35,985	36,024	+ 39
Foreign	2,615	2,663	2,863	+ 200
Total U. S. refinable	257,647	259,330	261,662	+2,332
Heavy in California	13,144	13,198	13,100	— 98

*As compiled by U. S. Bureau of Mines.

Crude Oil Production for the U. S.

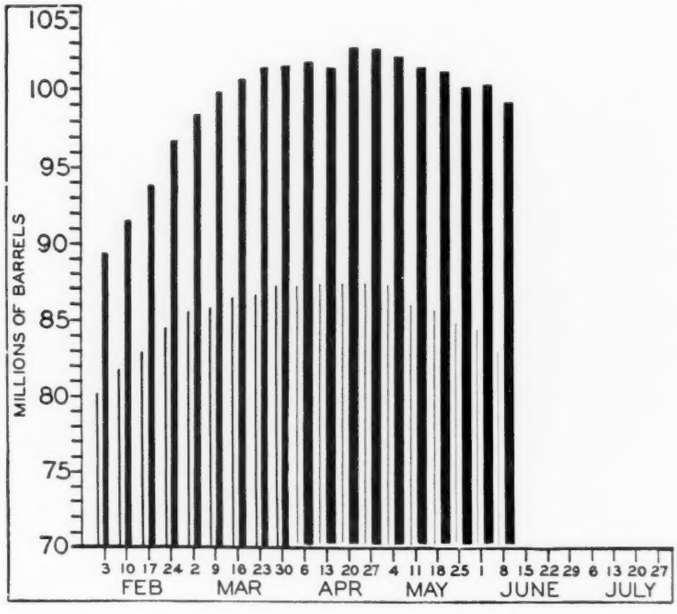
(American Petroleum Institute figures)

	Week Ended June 8 Barrels	Week Ended June 1 Barrels	Week Ended May 25 Barrels
Oklahoma	437,250	422,350	417,200
Kansas	150,950	158,850	160,500
Nebraska	250	100	150
Texas	1,393,950	**1,266,850	1,463,750
Louisiana	291,450	308,050	304,150
Arkansas	71,500	71,900	71,550
Mississippi	10,900	9,350	8,750
Illinois	457,200	449,600	435,850
Indiana	12,850	11,900	13,100
Eastern (Ill. and Ind. excluded)	92,800	98,900	94,950
Michigan	58,900	59,150	59,600
Wyoming	74,200	72,200	67,600
Montana	17,800	17,900	17,600
Colorado	3,200	3,300	3,350
New Mexico	107,350	107,350	106,350
California	636,400	593,600	611,200
Total U. S.	3,816,950	*3,651,350	3,835,650
Crude Imports	107,710	168,000	79,570
Total New Supply	3,924,660	3,917,050	3,915,220

*Revised.
**Revised due to four day shutdown in East Texas instead of three.

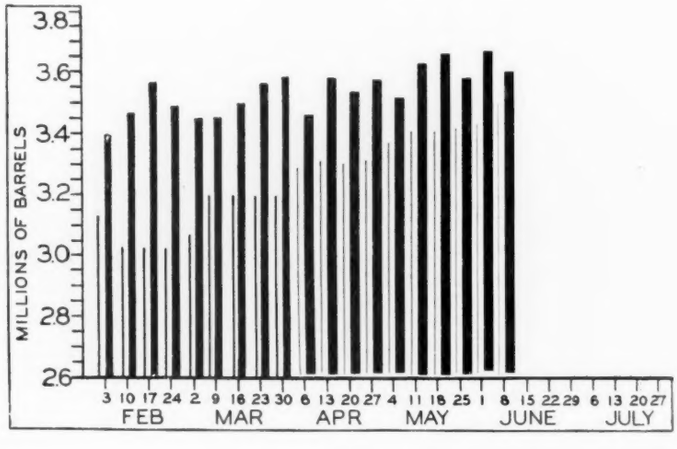
Total U. S. Motor Fuel Stocks

Heavy Line—1940 Light Line—1939



Daily Average Crude Runs to Stills

Heavy Line—1940 Light Line—1939



A. P. I. Weekly Refinery Report

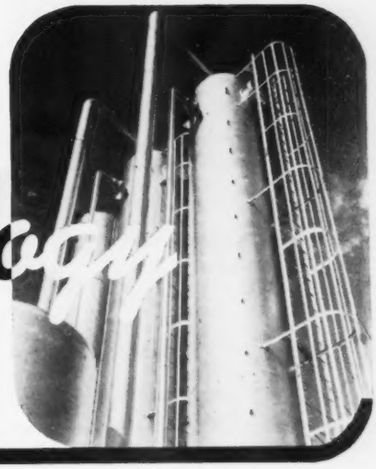
(Figures in Thousands of Barrels of 42 Gallons Each)

Districts	Daily Average Crude to Stills Week Ended		Per Cent of Reporting Capacity Operated Week Ended		a Gasoline Production Week Ended		Stocks Total Finished & Unfinished Motor Fuel (b) Week Ended		Stocks of Gas Oil & Distillates At Refineries Week Ended		At Terms. Trans. Pipelines Week Ended		Stocks of Residual Fuel Oil At Refineries Week Ended		At Terms. Trans. Pipelines Week Ended	
	June 8	June 1	June 8	June 1	June 8	June 1	June 8	June 1	June 8	June 1	June 8	June 1	June 8	June 1	June 8	June 1
East Coast	577	585	89.7	91.0	1,411	1,463	23,588	23,603	3,678	3,257	4,358	4,358	3,950	3,767	5,003	4,879
Appalachian	119	115	83.8	81.0	430	401	3,812	3,862	236	238	99	104	633	644	.....	.....
Ind., Ill., Ky.	551	556	88.9	89.7	2,196	2,281	17,166	17,586	2,871	2,694	348	375	3,215	3,284	60	61
Okla., Kans., Mo.	287	285	88.9	88.2	(c)1,038	(c)966	7,848	8,050	1,100	1,092	41	42	2,010	1,962	.....	.....
Inland Texas	121	117	72.5	70.1	545	494	1,993	2,016	285	288	.....	.....	1,501	1,514	.....	.....
Texas Gulf	851	878	93.1	96.1	2,658	2,686	14,870	14,847	4,099	3,863	445	445	5,076	5,109	183	253
La., Gulf	111	128	69.4	80.0	303	267	2,764	2,883	1,020	976	22	52	786	659	257	175
No. La., Ark.	46	38	88.5	73.1	124	100	559	556	241	231	17	7	471	468	.....	.....
Rocky Mt.	56	59	84.8	89.4	193	209	1,578	1,639	147	142	.....	.....	627	626	.....	.....
California	500	514	68.5	70.4	1,306	1,393	18,238	18,251	8,064	7,918	2,103	2,056	55,125	55,410	23,554	23,742
Total Reporting	3,219	3,275	84.3	85.8	10,174	10,260	92,416	93,293	21,741	20,699	7,433	7,439	73,394	73,443	29,057	29,110
U. S. Total (d)	3,600	3,650			11,627	11,793	99,471	100,353	22,596	21,514	8,013	8,019	75,399	75,448	29,267	29,320
U. S. Total 6-8-39 (d)	3,490				11,497		83,157		21,253		7,643		82,269		29,334	

(a) Includes straight-run, cracked and natural blended.
(b) Includes stocks at refineries, in bulk-terminals, pipe lines and in transit.
(c) 12% of reporting capacity in this district did not report gasoline production.
(d) Estimated, U. S. Bureau of Mines basis.

Refining Technology

INCLUDING INTERNATIONAL PETROLEUM TECHNOLOGY



A CONSIDERABLE stimulus to catalytic cracking and catalytic reforming may result from any large expansion of our military air force if the recommendation of Dr. D. P. Barnard, Standard of Indiana, and R. B. Cragin, M. W. Kellogg Co., for utilization of highly aromatic type aviation fuels is acceptable to aircraft engine manufacturers.

The question of availability of fuels has been raised and these authors made public this week at the summer meeting of the S.A.E. their findings relative to fuels other than those of the paraffin series which are commonly used in high-octane aviation fuels. These authorities concluded that catalytic cracking and reforming, the main source of high-octane aromatic type fuel, will become a major tool for production of motor fuel in the not too distant future. Large volume and relatively low cost aviation fuel are strong arguments for large-scale utilization in aircraft.

It remains for the aircraft engine designers to state their position in terms of required fuel qualities, willingness to pay a premium for fuels, and ability to produce an engine taking full advantage of the aromatic type fuel qualities, before refiners can embark on large-scale production of aviation fuel.

★ ★ ★

Behind the scene of the American petroleum industry, three developments whose aims are to supplement petroleum in the field of liquid fuel production are important enough to be considered seriously in future expansion of the motor fuel market. This does not mean an immediate expansion of demand such as a war would produce, but perhaps the normal growth of the next 20 years.

These developments are hydrogenation of coal and carbonaceous materials, power alcohol, and shale oil. Great progress has been made in coal hydrogenation, more than many people realize, and so much in fact that it is interesting to speculate on how much motor fuel from coal we might be using if petroleum geology, production, and cracking researches had not kept a few jumps ahead.

Coal hydrogenation, as is generally well-known, has been pushed with great vigor in Europe, particularly in Germany and Great Britain where large commercial plants using hydrogenation processes supply an appreciable portion of motor fuels, but has not been considered seriously here in view of the knowledge that economic conditions forced it to the commercial stage abroad and plants are given governmental aid.

Considerable coal hydrogenation research is going on quietly in this country, however, both as a means of using our greater *visible* reserves of coal and in connection with petroleum research. The progress of the U. S. Bureau of Mines has been published from time to time on both coal hydrogenation and oil shale research. Evidence of other research is in published literature and issued patents.

Publications on coal hydrogenation by the Bureau of Mines have been numerous during the past year and a half. The Bureau's most recent report has just been issued. The Bureau of Mines of Canada the past five years has also been studying Canadian coals as sources of hydrogenated products and has just issued a report of this work.

The American report (R.I. 3498) covers some low-rank coals which are available in tremendous quantities in the western states. Preliminary hydrogenation studies indicate fairly complete conversion to liquid and gaseous products, i.e. 85-95% of the dry ash-free coal substance. This subbituminous coal and lignite has a high oxygen content which caused formation of more water and CO_2 and less oil than from bituminous coal, but liquefaction took place readily, it was found. The data obtained is inadequate for predicting the suitability of the coals for large-scale continuous hydrogenation but will be used in selection of samples for further study.

The general conclusion in the Canadian report on ten coals is that the best coals for hydrogenation are in the high-volatile A and B groups (A.S.T.M. classification) of the bituminous class, and are high in nitrogen. Yields ranging from 128 to 185 U. S. gallons per short ton are reported.

It might be wondered that there has been no such effort to subsidize the production of oil from coal, as has been made recently on alcohol as a motor fuel component. From a conservation standpoint this would be just as logical, and no doubt convincing arguments might be developed to show the extent to which employment in a new industry would dispense with the relief problem.

Left by themselves these developments will advance with the greatest benefit to motorists or other consumers of liquid fuels. Coal hydrogenation technology is only a few jumps behind petroleum. If petroleum research took a vacation it is conceivable that coal would soon become a source of American motor fuel, just as it is in Europe.

★ ★ ★

Automotive engine researchers stick doggedly to the job of ferreting out facts that may lead to improvement in the low efficiency which is characteristic of all engines, even diesels, in converting heat into usable energy. A spark-ignition engine may get a fourth, a diesel a third of the heat energy converted into usable power, but of the remaining three-fourths there is a portion that General Motors laboratories show cannot be accounted for.

Although the results reported this week to the Society of Automotive Engineers are yet insufficient to permit definite conclusions about how these losses occur, as long as there is a possibility that they may be turned into power the record of this laboratory's achievements warrants at least the conclusion that the elusive heat energy will be accounted for even if no means can then be found for converting it into more miles per gallon of fuel. M.G.V.

Aviation Fuel by Catalytic Cracking Promises Quick Volume at Low Cost

ABSTRACT

Processes for producing highly aromatic type aviation fuels, principally catalytic cracking and catalytic reforming, offer greater possibilities than processes for producing the generally used paraffinic type fuels for quick production of large quantities of high-octane aviation fuel. The further advantage of relatively low cost recommends these fuels.

The future course of aviation fuel production depends on the ability or willingness of aircraft engine manufacturers to build engines which will take full advantage of highly aromatic fuels. Octane numbers under 90 with 3 cc of lead and 5-7% reduction in heating value on a weight basis are the disadvantages of these fuels.

THE extent and rate at which availability of high-octane aviation fuel can be increased depends upon whether aircraft manufacturers and users are able or willing to accept fuels belonging to other than the paraffin series, it was brought out at the summer meeting of the Society of Automotive Engineers meeting this week at White Sulphur Springs, W. Va. D. P. Barnard, Standard Oil Co. (Ind.), and R. B. Cragin, The M. W. Kellogg Co., in a joint paper recommended processes for producing highly aromatic type fuels as offering greater possibilities than those which produce paraffinic type fuels.

The principal source of the high-octane highly aromatic type fuel would be catalytic cracking and catalytic reforming, the authors stated. These processes, they believe, will become major tools of refiners for production of motor gasoline in the not too distant future. It was pointed out that the manufacturing cost of this type fuel would be relatively low and that plants of considerably greater total capacity than that required to serve the high flash fuel needs of the aviation industry are now under construction or given serious contemplation for motor fuel production.

"On the other hand," they concluded, "if the industry is willing to pay a premium price for high-flash fuels of high octane number, and if quantity production is not essential except as a long-term project, it should be entirely feasible to produce a paraffinic type high-flash fuel of almost any knock rating thus far considered."

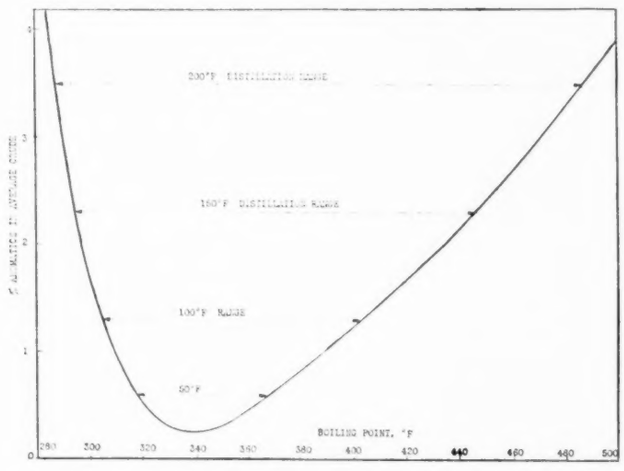
The future course of aviation fuel production depends on an early decision of aircraft manufacturers and users as to their ability or willingness to build aircraft engines which take full advantage of highly aromatic fuels. In using aromatic type fuel, it was pointed out that a 5-7% reduction in heating value on a weight basis as compared with paraffinic type fuels must be accepted. "To the aircraft engine designer this may be considered equivalent to a higher octane requirement for the aromatic type fuel in order to make possible comparable specific fuel consumption. Thus if aromatic type high-flash fuels are to be adopted in preference to paraffinic type fuels . . . it will probably be necessary to so design aircraft engines to 'appreciate' aromatics with respect to octane number. It is, of course, by no means a certainty that this can be done, but it is none the less a question which the aircraft engine researcher must answer before the petroleum chemist can most effectively direct his efforts."

Iso-Paraffins Limited

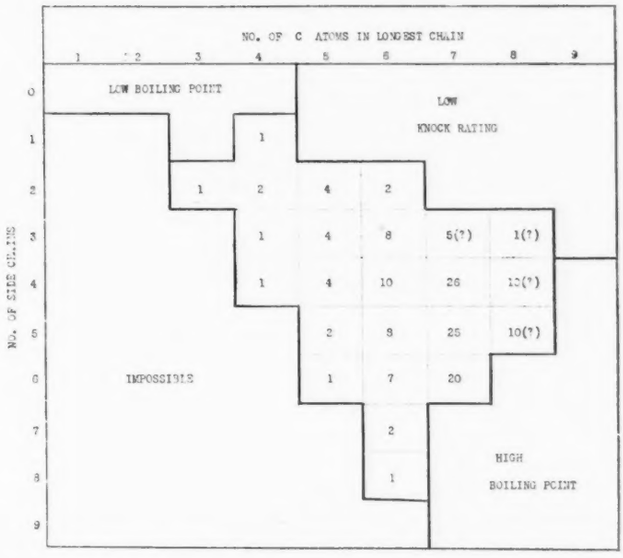
"While the number of theoretically possible constituents of high flash aviation fuels may be very large, the number of available iso-paraffins of satisfactory knocking characteristics is quite limited," the authors showed. Since olefinic fuels have proved disappointing from the knocking tendency standpoint under aviation engine conditions it is felt that certain "cyclic" hydrocarbons offer greater promise. Of these, the aromatic hydrocarbons were said to be available in relative abundance and are of uniformly high octane number. The following list includes the more prominent of these:

	B.P. F.	Heat of combustion
Cyclopentane	121.1	18,733
Benzene	176.2	17,288
Toluene	231.4	17,411
Meta xylene	278.5	17,586
Trimethylbenzene	328.3	17,659
Ethyl benzene	277.1	17,576
Diethylbenzene	363.2	.....
Iso-propyl benzene	306.3	17,719

The possible present and future methods of high flash fuel manufacture were reviewed briefly. These included alkylation, catalytic polymerization and isomerization for the paraffinic fuels, and catalytic cracking and reforming



The effect of boiling point range upon availability of aromatic type high-flash fuels was shown by Ellis and Sweeney at annual meeting of the S.A.E., January, 1940



Field of choice for constituents of paraffinic aviation fuels requiring 3 cc of tetraethyl lead to reach 100 octane number (ASTM). The number of available isomers is small compared with the number theoretically possible and includes "freaks" such as triptane

for the aromatic type fuels. Processes which can be expected to produce fuels of mixed type were said to be hydrogenation and thermal polymerization or gas reversion followed by hydrogenation or acid treating.

The cost of the alkylation process was said to be prohibitive at present although it was admitted that a way might be found to produce similar products cheaply in the future. Since polymerization alone ordinarily produces olefinic type materials unsuitable for aviation fuel, the product is hydrogenated to produce iso-octane. It is possible by polymerization to produce hydrocarbons of still higher molecular weight and di-isobutylene 2,2,4-trimethyipentane-4 but the process was said to be more complicated and difficult to direct.

Isomerization would normally produce iso-paraffins whose general characteristics are fairly well known. Little was said concerning the practical aspects of the process except that a considerable amount of research work will be required before potentialities of the process can be realized. The justification of such effort was said to rest on the answer to several questions left up to the aviation industry, just as in the case of the aromatic fuels.

Catalytic Cracking Major Tool

The authors stated that "it seems safe to conclude that in the not too distant future catalytic cracking will become a major tool in the refiner's hands for production of motor gasoline. The manufacturing cost of this gasoline will probably be little greater than present motor fuel manufacturing costs. Hence, it is possible that a high flash fuel of 76 to 78 ASTM (CFR-M) octane number may be manufactured at very much lower cost than would be involved in producing the iso-paraffinic type fuels.

"The product will contain 20-30% of aromatics depending on the operating conditions and feed stock chosen. Unfortunately the lead response of the product is only intermediate, the addition of 3 cc of tetraethyl lead gives an octane number of only 85-90 ASTM (CFR-M). However, the product has some application as a base stock into which could be blended various percentages of an iso-paraffinic blending stock." The outlook for catalytic cracking was summed up by calling attention to large potential availability, relatively low manufacturing cost, but a maximum octane number below 90 ASTM.

Catalytic reforming was described as "a process whereby straight paraffins are converted to aromatic hydrocarbons, usually containing side chains. In keeping with the general behavior of aromatic hydrocarbons, the lead responses in products of this type are not particularly high when measured by conventional engine test procedures. However, the fuel has the high degree of sensitivity characteristic of most aromatics. If it is feasible to design an engine to take advantage of this sensitivity it should be possible to appreciate both octane number and lead response in this type of fuel to a degree sufficient to more than counterbalance the loss in heating value of the aromatics.

The refiners' position with regard to high-flash aviation fuel manufacture was summed up by framing six questions for the aircraft engine designer or the aircraft used to answer before the petroleum chemist can direct his efforts most effectivelly toward the solution of the problem.

"1. What are the necessary properties of a high-flash fuel from the standpoint of ASTM distillation, flash point, octane number and heating value?
"2. Does the aviation industry really want high-flash fuels?
"3. How quickly will the industry require large quantities of high-flash fuels?
"4. Can the industry pay a premium for such fuels?
"5. Can the aircraft engine manufacturer design an engine to take advantage of the octane number 'sensitivity' of aromatic type fuels?
"6. Can a 'tolerance' in reduced heating value be established in terms of compensating octane number or compression ratio increases?"

Contents...

REFINING TECHNOLOGY

June 12, 1940

Highly aromatic type aviation fuels produced by catalytic cracking are recommended by Standard Oil and Kellogg company engineers as offering greater possibilities for high-octane fuels than paraffinic type fuels, now generally used in 100-octane fuel R-210

Shell's 1,500-barrel alkylation plant at Houston charges residual butane-butene fraction from hot acid polymerization. Sulfuric acid requirement is 0.55-0.60 lb. per gallon of alkylate and spent acid is used in treating naphthas and light fuel oils R-212

Molten salts used for heat transfer on Houdry catalytic cracking units make a new high temperature at which commercial fluid heat carriers have been applied without pressure. Among its advantages are thermal stability, low melting point, and high heat transfer rate. R-220

Society of Automotive Engineers speakers present ideas on eliminating engine deposits and their accompanying difficulties. Additives, valve design, and lubricating oil circulation are found helpful R-224

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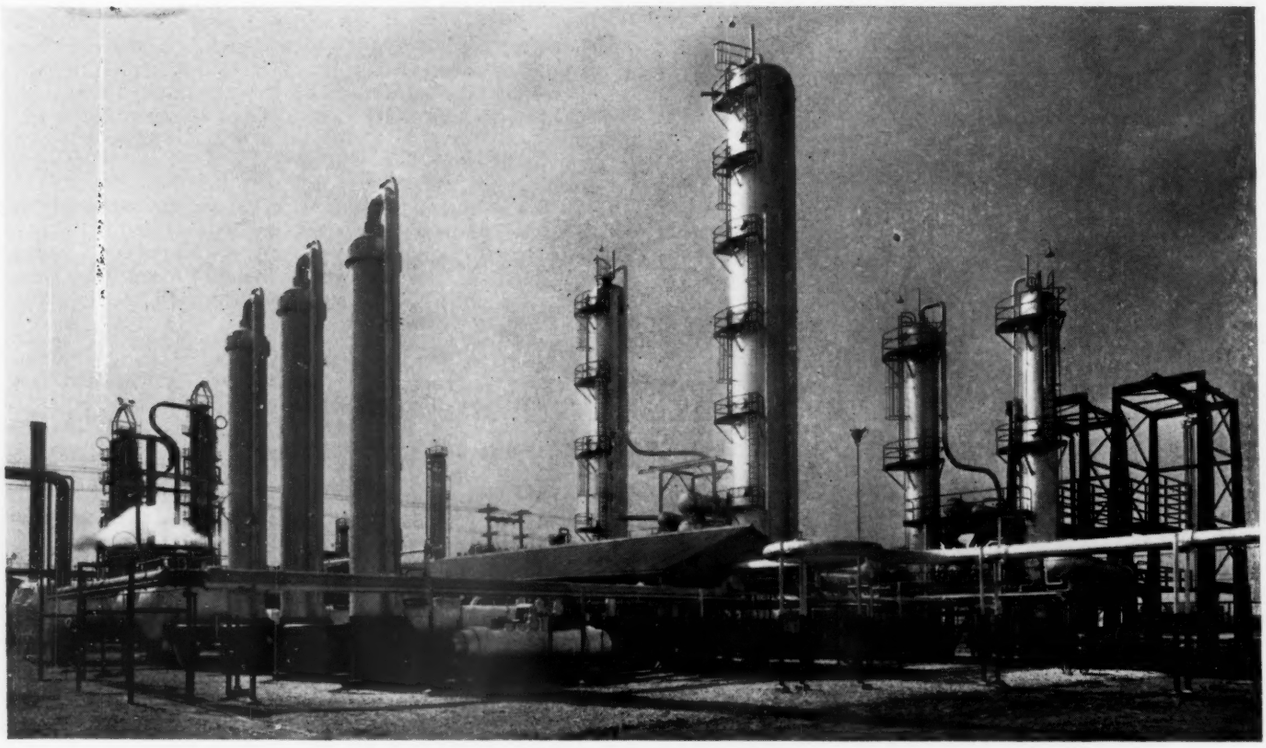
New Patents R-228



A general view of the Houston alkylation plant showing the reactor system and time tanks in the left foreground and fractionating columns in center background

729.7

Alkylation Plant Takes Olefins Left by Selective Polymerization

By A. H. Garrison*

ABSTRACT

Shell's 1500-barrel alkylation plant at Houston uses as charge stock the residual butane-butene fraction from hot acid polymerization. Substantially all of the olefinic portion of the charge consists of the normal butenes remaining in the residual C_4's after removal of all isobutene and dienes and part of the normal butenes by the hot acid process. The principal source of isobutane is the straight run butane contained in the crude.

The major heat load is carried by exhaust steam and an economical refrigeration system is provided by an ammonia absorption type unit. No very unusual control problems are involved except in the de-isobutanizer column which operates with a 20-degree temperature difference from top to bottom. Sulfuric acid consumption is 0.55-0.60 lb. per gallon of alkylate. The product is 92.5-93 octane number, has a 2.5-pound Reid vapor pressure, and contains only .001% sulfur. It has a 90% point of 255°F. and endpoint of 375°F.

AN OUTSTANDING development of the past year in the utilization of light petroleum fractions to produce premium aviation fuels has been the rapid expansion of the sulfuric acid alkylation process.

The alkylation unit at the Houston refinery of Shell Oil Co., Inc., was placed in operation in October, 1939. It is the third and largest unit of its type to go into operation at the Shell refineries. The first two units completed are at the Martinez and Dominguez refineries in California. These units were started in August and September, 1939. A fourth unit, identical in size and design to the Houston unit, recently has been placed in operation at the Wood River, Ill., refinery.

The Houston unit is designed to produce approximately 1500 barrels per day of high octane number alkylate when charging residual butane-butene fraction from hot acid polymerization. Other olefin-containing charging stocks may be employed, and a feature of the unit is its flexibility in this respect. Other important features are the design for economy of heat and refrigeration. The major heat load is carried by exhaust steam. The alkylation unit, together with the refrigeration unit and the necessary re-

*Head of Gas Department, Shell Oil Co., Inc., Houston refinery.

finery expansion in stabilizing facilities, utilities, etc., represents an investment of a little over $1,000,000. In general, the unit has met all design expectations both as to performance of equipment and quality of product.

Process

The process employs 96-100% sulfuric acid as catalyst at low temperature, 40-60° F., to couple olefins and isoparaffins. The branched chain paraffins formed are very high in anti-knock rating and lead susceptibility and are especially valuable as aviation fuels.

The process was described in detail in a paper presented at the twentieth annual meeting of the American Petroleum Institute, Chicago, Nov. 17, 1939, and published in the Nov. 29 issue of NATIONAL PETROLEUM NEWS. This paper covers the work of five major oil companies who have developed the process to its present commercial stage.

Prior to construction of the Houston unit, pilot plant work was carried out at the Houston refinery over a period of several months. This work was concerned chiefly with the comparison of available charging stocks and with obtaining data for engineering design. A large amount of laboratory and pilot plant work on the basic process was done by Shell Development Co.

Preparation of Charging Stocks

In the Houston refinery the cracked and reformed gasolines produced flow to depentanizing columns where the pentane and lighter fractions are taken overhead. This cut, together with the light fractions recovered by the absorption and compression units, is charged to a depropanizing column. The C_3 and lighter are taken overhead and, after de-ethanization and treating, flow to a high pressure catalytic polymerization unit of Shell design. The depropanizer bottoms are charged to a debutanizer where the C_4 is taken overhead. After removal of mercaptans the C_4 is charged to a hot acid polymerization plant for the production of an octene fraction for subsequent hydrogenation to technical iso-octane. The hot acid process removes substantially all of the isobutene and dienes and part of the normal butenes. The n-butenes remaining in the hot acid residual C_4 have so far been the major source of olefin for the alkylation unit.

The hot acid residual C_4 contains some isobutane. The principal source of isobutane, however, is the straight run butane contained in the crude. The crude distillation units are equipped with two stabilizing units, one for sweet and one for sour crudes, each consisting of a depropanizer and a debutanizer. Each unit produces a straight run C_4 fraction which normally contains between 20 and 35 per cent isobutane with fractional per cents of propane and pentane. The remainder is normal butane. The butane produced from sour crudes is caustic-washed for mercaptan removal. The butane is charged to the de-isobutanizer at the alkylation unit proper for separation of the isobutane.

Description of Flow

Fig. 1 represents a simplified flow sheet of the alkylation unit. The olefin feed first exchanges heat with the cold product from the reactor units. It is then further cooled to reactor operating temperature by vaporizing ammonia and passes to a settler for water removal. This settler serves to trap any entrained water; part of the dissolved water is also removed due to greatly reduced solubility at the lower temperature. When stocks which normally require a high acid charge are being processed, the removal of dissolved water is of no consequence, since the dilution is too slight. However, with the most favorable stocks and optimum operating conditions where the acid consumption can be reduced to the order of 0.5 lb. acid per gallon alky-

The alkylate passes to a conventional two-column distillation unit shown here. The columns are designed for complete flexibility to prepare fractions of any desired boiling range. In the background are vertical time tanks which are parts of the reactor units.

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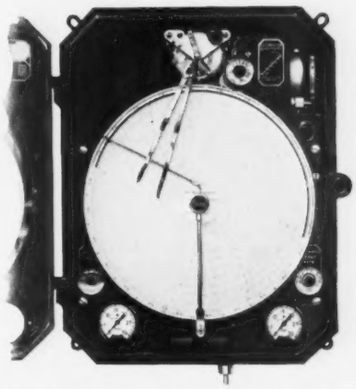

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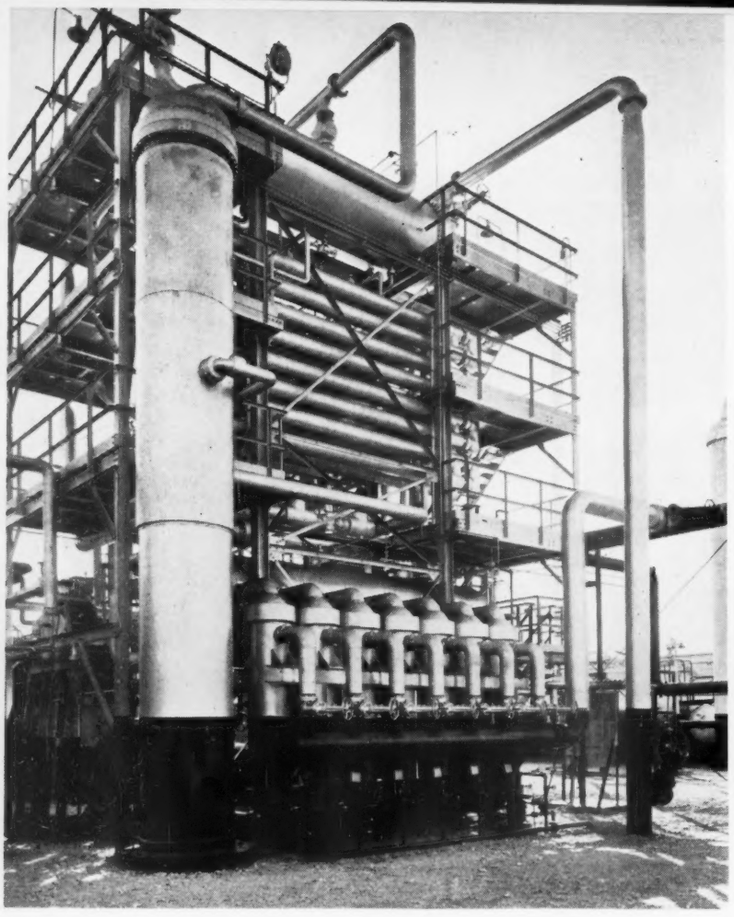

The refrigeration unit is of the ammonia absorption type with a design rating of 700 tons per day

late or less, removal of dissolved water probably is worth while.

Leaving the settler, the olefin stream joins the isobutane stream from the de-isobutanizer as it enters the blend tank. The purpose of the blend tank is to avoid periods of high olefin concentration which might occur due to temporary failure or reduction of the isoparaffin feed which would be damaging to the acid.

The blended feed enters the reactors at the suction of the circulating pumps. As this is the point of lowest pressure in the reactor, it permits injection of the feed without additional pumps and also allows use of the circulating pumps as mixers. Three reactor units are provided; they normally operate in parallel. This arrangement provides flexibility of operation and will permit maintenance work on a reactor without shutting down the entire unit. Connections are also provided for operating the three reactors in series with split olefin feed.

Each reactor unit consists of a circulating pump, a cooler using ammonia as refrigerant, a time tank, and a settler. This arrangement is very effective in obtaining dispersion and mixing and is particularly suited both to design for and to control of the temperature, acid-to-hydrocarbon ratio, and ratio of recycle to fresh feed. Both of these ratios affect the ratio of isobutane to olefin at point of mixing, which is an important factor. The temperature is controlled by a back pressure controller on the vaporizing ammonia. The acid ratio is maintained by throttling the acid return from the settler to the circulating pump.

The product streams from the three reactor settlers combine and pass through a larger final acid settler to a caustic soda neutralizer. This is desirable to remove a trace of sulfur dioxide formed in the reactors. The reaction system up to this point is maintained liquid full and at a pressure of 50-60 psi., which is somewhat above the vapor pressure of the blend. A booster pump takes suction from the neutralizer and charges the product to the debutanizer. A pressure controller operating a motor valve in the pump discharge is set to maintain the desired suction pressure.

The alkylate is withdrawn from the debutanizer bottom and charged to a conventional two-column distillation unit designed for complete flexibility to prepare fractions of any desired boiling range for aviation fuel blends. The debutanizer and alkylate distillation unit reboilers are heated with circulating hot oil drawn from the heater of an adjacent unit.

The debutanizer tops, containing a large volume of unreacted isobutane and the normal butane introduced with the olefin feed, is returned to the de-isobutanizer. The normal butane from both the straight run and olefin feeds is withdrawn from the bottom of the de-isobutanizer. The tops, containing preferably higher than 80% isobutane, is recharged to the unit. To reduce the load on the de-isobutanizer and increase the isobutane/olefin ratio, debutanizer tops and final reactor settler product can be recycled to the reactor.

Part of the debutanizer overhead stream is returned to one of the depropanizers to keep down the concentration

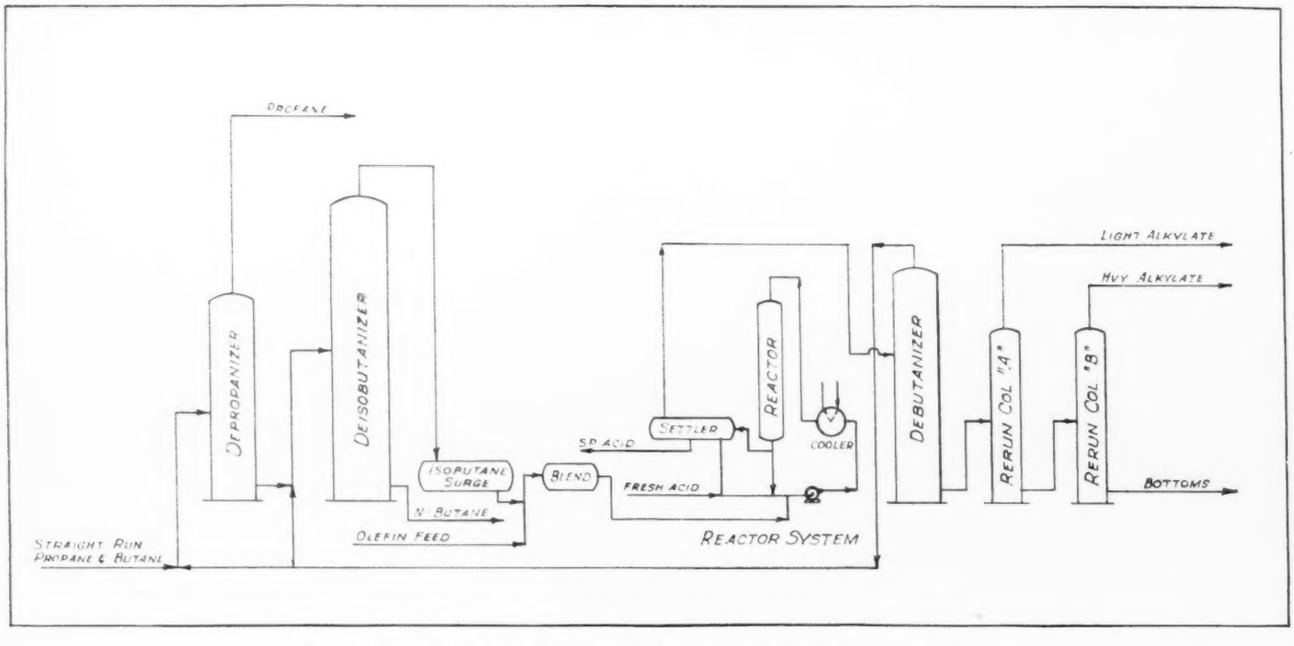

Fig. 1—Simplified flow diagram of Shell's alkylation plant at Houston

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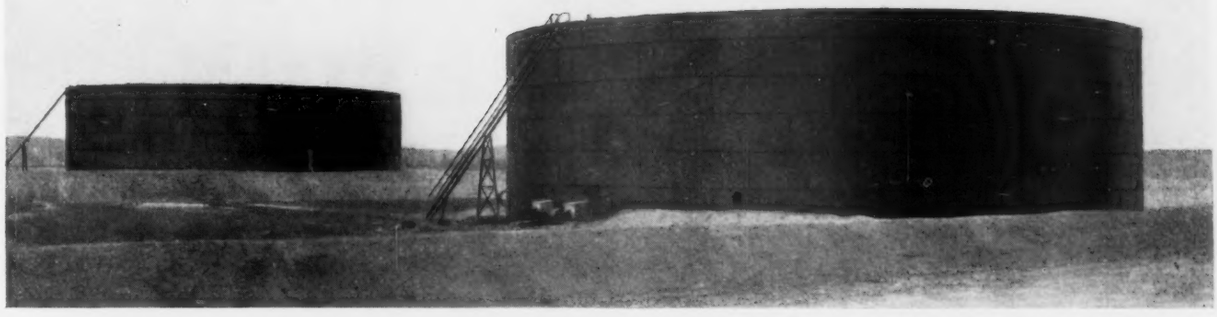

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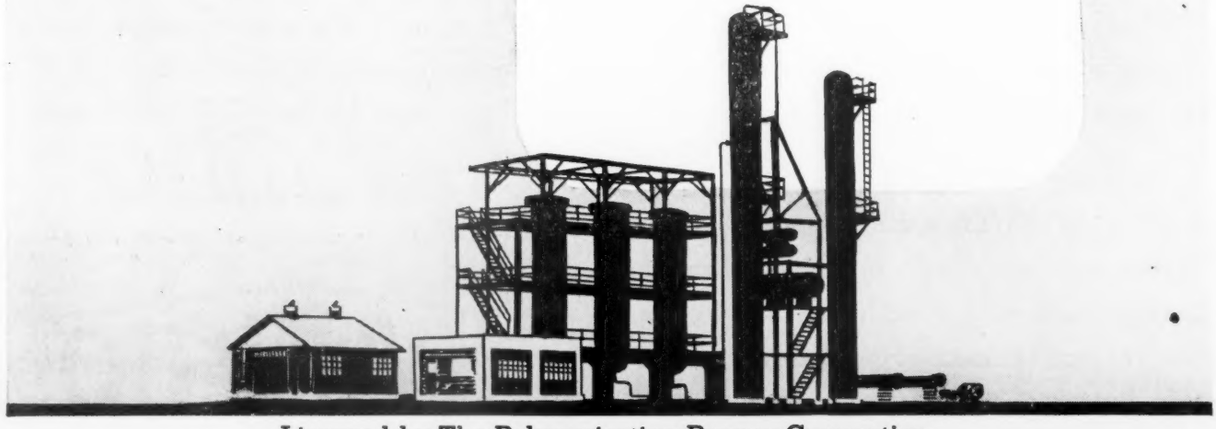

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of propane which would otherwise accumulate in the isobutane due to introduction of small amounts with the olefin and straight run feeds.

Instrumentation

In general, the unit presents no very unusual control problems, but the instrumentation of the de-isobutanizer column may be of special interest. This column, producing practically pure normal butane from the bottom and 80-90% isobutane overhead, operates with a temperature difference from top to bottom of only about 20°F. Since the bottom temperature cannot vary without loss of isobutane, it cannot be used as an instrument control point. Instead, a point is used higher in the column where the temperature change from tray to tray is greater. The duty on the reboiler is over 30,000,000 Btu. per hour. This is supplied by exhaust steam. A "butterfly" type valve is used to control the steam flow. It is operated by an automatic-reset pressure controller actuated by the steam pressure on the reboiler. This pressure controller is in turn reset by the temperature instrument.

The reflux accumulator level and the column pressure are maintained by control of the water flows to the reflux and final condensers, respectively. Both of these instruments are of the automatic-reset type. The instrumentation of this column provides very stable conditions.

Properties of Alkylate

The quality of the product varies with operating conditions. It has been found that conditions favorable to long acid life usually also result in higher octane number and higher yield of fractions in the aviation gasoline boiling range. Average properties of the butane free alkylate produced from isobutane and normal butenes under design conditions follow:

Gravity, °A.P.I., @ 60° F.	69
A.S.T.M. Distillation	
I.B.P., °F.	122
10% Recovered @ °F.	190
20% Recovered @ °F.	205
30% Recovered @ °F.	215
40% Recovered @ °F.	221
50% Recovered @ °F.	225
60% Recovered @ °F.	227
70% Recovered @ °F.	230
80% Recovered @ °F.	236
90% Recovered @ °F.	255
E.P., °F.	375
Rec., %	99.0
Res., %	0.5
Loss, %	0.5
Reid Vapor Pressure, Lb./Sq. In.	2.5
Sulfur, %	.001
Unsaturates, %	0.2
Octane No. A.S.T.M.	92.5-93.0

Acid Requirements

It has been found desirable to maintain an acid concentration in the reactor units of about 90-91% by weight. This is the titratable acidity. On an oil-free basis the concentration is, of course, much higher, the actual water dilution being small.

The over-all acid consumption to date, including experimental operation, is about 0.80 lb. acid per gallon of alkylate produced. Improved conditions more recently established have reduced this to about 0.55 to 0.60 lb. per gallon. Most of the spent acid is used in treating naphthas and light fuel oils.

The refrigeration unit is of the ammonia absorption type. The design rating is 700 tons per day. Choice of the absorption type unit in preference to compression was made on the basis of operating and capital costs. A large factor was, of course, the availability of exhaust steam.

The ammonia vapor returning from the alkylation unit coolers is absorbed in weak ammonia water in spray type shell and tube absorbers. The strong solution from the absorbers is pumped to the bubble column after heat exchange with the hot weak solution. The column reboiler is heated with exhaust steam. The ammonia vapor is taken overhead from the column and condensed for reuse at the alkylation unit coolers.

The condensers are elevated so that reflux is returned to the column by gravity flow. Thus only one operating pump, the strong solution transfer pump, is required. Reflux flow, reboiler temperature, and ratio of absorbent-to-vapor are instrument controlled, so that the unit requires very little attention.

A.S.T.M. Committee D-2 Reports Changes in Petroleum Standards

The report of Committee D-2 on Petroleum Products and Lubricants of the American Society for Testing Materials will be a focal point of interest to oil refiners at annual meeting of the society June 24-28 in Atlantic City. T. A. Boyd, chairman of the committee, has prepared a report including a procedure for calculating viscosity index, new methods of test for dropping point of lubricating greases and for carbonizable substances in white mineral oil (liquid petrolatum).

A new proposed method of test for aniline point, a revision of the diesel fuel oil classification, and of the test for ignition quality of diesel fuels are included for information.

The report also recommends for immediate adoption revisions of six standard methods which cover two distillation tests of gasoline, Pensky-Martens flash point test, knock characteristics of motor fuels, water test, and methods of analysis of grease. The specifications for Stoddard solvent, and the test for sulfonated residue of plant spray oils are recommended for adoption as standard. Revisions will be submitted in four tentative methods. A revised procedure for neutralization number is also presented as tentative.

More than 100 papers and reports are scheduled for presentation at the annual meeting. Refinery enginers and metallurgists will be particularly interested in the session dealing with the effect of temperature on properties of metals. "The Creep of 17 Low Alloy Steels at 1000° F." will be presented by U. S. Steel Corp. and National Tube Co. engineers. R. H. Thielemann, General Electric Co., will discuss "Some Effects of Composition and Heat Treatment on the High Temperature Rupture Properties of Ferrous Alloys." Tension, rupture, and creep tests will be covered in three other papers and the session will be opened by a report of the Joint Research Committee on Effects of Temperature on the Properties of Metals.

There will also be a session on water consisting of a committee report, symposium on water classification, water analysis, and corrosive tests and tendencies.

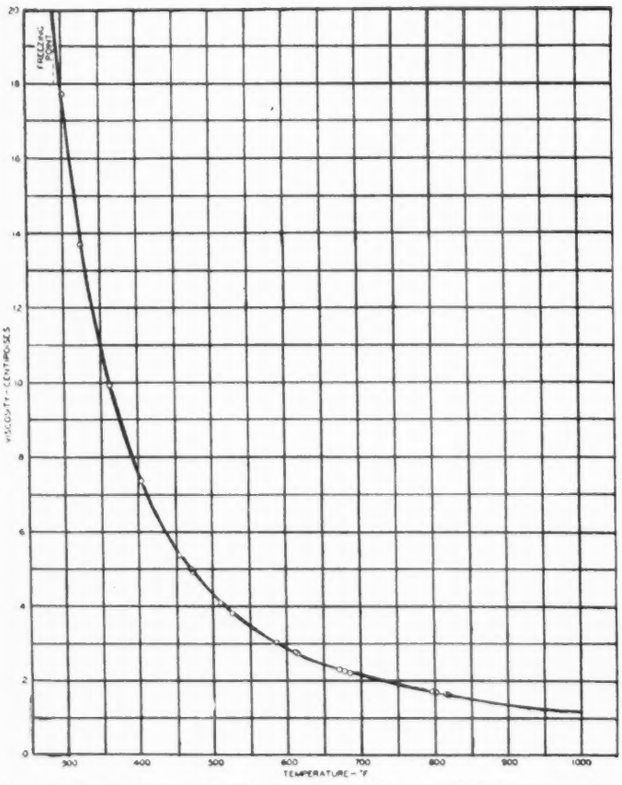
A symposium on petroleum chemistry's contribution to the automotive fields is in progress of preparation for the Fall meeting of the Petroleum Division of the American Chemical Society in Detroit, Sept. 9 to 13. Heading the committee in charge of the arrangements is M. R. Fenske, Pennsylvania State College. Other members are T. A. Boyd, General Motors Corp., G. M. Maverick, Standard Oil Development Co., and E. C. Williams, Shell Development Co.

Houdry Units' Heat Transfer Salts Described at A.I.C.E. Meet

ABSTRACT

Molten salts, used on large scale as a heat transfer medium on Houdry catalytic cracking units, consist of a mixture of nitrates and nitrites of sodium and potassium having a low melting point, high heat transfer rate, and thermal stability. The molten salt mixture is applicable at temperatures above that attainable with any other commercial fluid heat carrier without being held under pressure.

Up to 850° F. open-hearth steel resists corrosion in the presence of the molten salt mixture. High chromium or certain low-chromium containing aluminum and silicon are recommended for temperatures up to 1100° F. Many tests have shown no special dangers other than those inherent in the high temperatures involved.



Viscosity of the molten salt mixture at 300 to 1000° F. ranges between the room temperature viscosities of sulfuric acid and water

THE use of molten salts as a heat transfer medium, which received wide attention last year as the result of application on large scale to Houdry catalytic cracking units, was discussed in relation to its present status in comparison with other fluid heat carriers at the semi-annual meeting of the American Institute of Chemical Engineers at Buffalo, May 13-15, in a paper* by W. E. Kirst, W. M. Nagle, and J. B. Castner, E. I. du Pont de Nemours & Co.

This new heat transfer medium is a mixture of nitrates and nitrites of sodium and potassium, known as "HTS." The mixture, consisting of approximately 40% $NaNO_2$, 7% $NaNO_3$, and 53% KNO_3, was adopted for the Houdry process because it has a low melting point, a high heat transfer rate, and thermal stability. It is not corrosive on steel at temperatures above those obtainable with Dowtherm, hot oil, or high pressure steam, it was stated. It can be used at atmospheric pressure in the temperature range of about 300° to 1000° F.

In addition to being used in the Houdry units, where as much as a 1,000,000 pounds are used in a single unit,[1] the salt mixture is being used in the new Thermofor kiln,[2] developed by Socony-Vacuum Oil Co. for regeneration of decolorizing clays. As the advantages and properties of the fluid become better known, it is expected that numerous applications will develop where high temperature, low corrosion rate, and atmospheric pressure operation are desirable.

The commercially important heat transfer fluids were presented in the following table:

Important Heat Transfer Fluids

Fluid	Usual Limits Temperature, °F.	Pressures Psi. gauge	Limitations
Steam or water	32–460	0–450	High pressure
Oil	30–550	0	Cokes above temperature limit
Dowtherm A 75% diphenyloxide 25% diphenyl	54–700	0–135	Cokes above temperature limit
Mercury	—37-1000 or higher	0–180 or higher	High cost, high density, toxic vapors
"HTS"	290–1000	0	
Flue-gas or air	Up to 800 in iron Ducts; to 1600 in special alloys	0	Volume of gas per heat unit is large, temperature control difficult.

A low freezing point is desirable to facilitate fusion of the transfer agent with plant steam, the authors pointed out. The freezing point of the standard mixture, 288° F., is low enough to be melted by steam available at all plants. The specific gravity of heat transfer salt varies from 1.97 to 1.68 in the temperature range of 300-1030° F. The specific heat of the solid salt mixture is 0.32 and that of the melt, 0.373 Btu./lb./° F. The latent heat of fusion is approximately 35 Btu. per pound.

The viscosity of the molten salts is shown by the accompanying graph. It will be seen to drop rapidly from about 20 to 4 centipoises as the temperature rises from

*Published in full in A. I. C. E. Transactions, Vol. 36, No. 3 (June, 1940) with discussion.
[1]National Petroleum News, Aug. 23, 1939, p. R-346.
[2]National Petroleum News, Nov. 15, 1939, p. R-486.

16 YEARS OF CONSISTENT LOW COST PRODUCTION

In 1924—16 years ago—Gray Clay Treating Units were first placed in commercial operation.

Since that time Gray Clay Treating acceptance has increased until today it is widely used by all classes of refiners. That's largely because it consistently fits the requirements of refiners for economically treating gasolines in conjunction with a large variety of cracking processes.

Gray Clay Treating Units will produce low gum content gasoline without loss of octane number. They will last throughout the life of the cracking unit. Often, when new cracking units have replaced old ones, the Gray Process has again been chosen to treat the gasoline.

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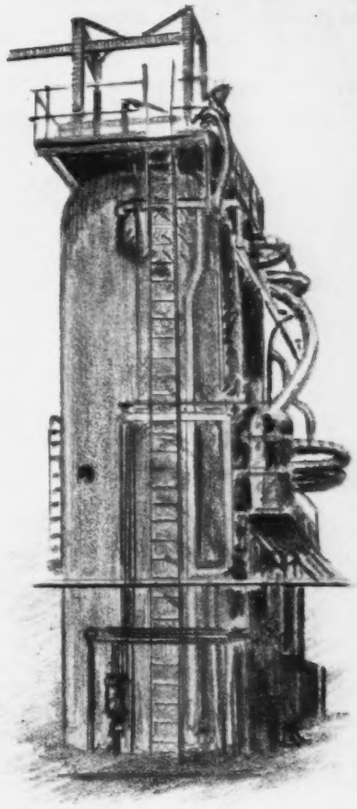

OVER 7 MILLION BARRELS

In 1926 a certain refiner installed a small Gray Clay Treating Unit. To date this unit has produced 7,655,000 barrels of low gum content gasoline.

GRAY CLAY TREATING

300 to 500° F. and then to level off, coming to about one centipoise at 1000° F'.

In a comparison of the molten salt with air as a heat transfer fluid, it was shown that air under three atmospheres pressure (30 psi. gauge) would require 48½ times as many one-inch tubes and 1700 times as much power for circulation as molten salt. Even at ten atmospheres the difference is great, as indicated by the following table:

Comparison of Standard Salt Mixture and Air as Heat Transfer Fluids

Bases of Comparison: One-inch I. D. tubes for conduit, 800° F. average fluid temperature, pressure drop of 3.5 psi. per 100 feet of tubing, and 50° F. difference between inlet and outlet fluid temperature.

	Salt Mixture	Air	
		At 3 atm.	At 10 atm.
Pounds/hr./tube	6000	185	360
Heat carrying capacity per tube	111,900 Btu.	2310 Btu./hr.	4500 Btu./hr.
No. of 1" tubes required to transfer 111,900 Btu./hr. at 50° F. temp. difference	1	48½	25
Total pounds/hour	6000	8970	8970
Theoretical Hp. to overcome friction	0.014	24.1	7.2
Individual coef. of heat transfer	858	28	40

Up to 800° F. the salt mixture was said to be very stable and capable of giving "excellent service for many years." At higher temperatures the salt undergoes a slow decomposition accompanied by a gradual rise in freezing point. Partial replacement at intervals was suggested as a means of maintaining sufficiently low freezing point.

Results of corrosion tests showed that open-hearth steel resists corrosion at 850° F. or below. At 1000-1100° F. more resistant metals, such as high chromium and chromium-nickel steel, and certain low-chromium alloys containing aluminum and silicon were recommended. The following table shows results of tests in terms of inches penetration per month.

Corrosion of Metals by Standard Salt Mixture

Metal	Corrosion Rate Inches Penetration per Month 850° F.	1000° F.	1100° F.
Steel—open hearth (API Grade A)	0.0003	0.001 to .002	0.01 to 0.05
Alloy Steels			
15-16% chromium iron	.....	0.0000	.....
18-8% chrome nickel with 1% columbium	.....	0.0000	.....
18-8% chrome nickel with 2-4% moly (KA2SMo)	.....	.....	.....
Alcrosil No. 3 (3.0% Cr, 0.52% Al, 1.01% Si, 0.5% Mo)	0.0002	0.001	0.002 to 0.006
Alcrosil No. 5 (5.0% Cr, 0.57% Al, 0.87% Si, 0.5% Mo)	0.0002	0.0005	0.001 to 0.002
Non-Ferrous Metals and Alloys			
Copper	.....	0.03	.....
Monel	.....	0.0001	.....
Inconel	.....	0.0000	.....

The molten salt mixture was said to offer no special dangers in the absence of foreign materials other than those inherent in any liquid at the high temperature at which it may be used. The presence of organic matter involves certain hazards and the salts should be kept out of contact with cyanides, aluminum, or aluminum alloys. A large number of tests have been made by the du Pont company on the reactivity of the melt.

Attempts have been made to detonate mixtures at room temperature and at 1100° F. with 0.5 pound of blasting gelatin unsuccessfully. In other trials motor fuel, gas oil, and crude oil mixed with flowers of sulfur were released beneath the surface of an open pot of the molten salt at 1100° F. Following these and other tests, analysis showed little chemical reaction. With ground petroleum coke held beneath the surface at 1100° F. in iron and stainless steel baskets, a definite reaction was obtained between the organic matter and the salt mixture.

Although the salt mixture provides a heat transfer medium applicable at temperatures above that attainable with any other commercial heat transfer liquid, it is hoped that work now under way will extend the temperature range over which this material is practical.

Progress in Boiler Feedwater Treatment is Reviewed

Reviewing progress in boiler-feedwater treatment at the spring meeting of the American Society of Mechanical Engineers* in Worcester, Mass., May 1-3, C. H. Fellows, The Detroit Edison Co., said the increasing high pressures at which boilers are being operated has not changed the objectives of treatment but it has increased the importance and significance of treatment in relation to desired efficiencies.

Mr. Fellows named a number of advances made in treating methods, aimed at prevention of hard scale, corrosion, carry-over of boiler water, and caustic embrittlement. He said processes of treatment must be tailored to the conditions to be met and that even when a complex process had been worked out it would not necessarily be permanent due to possible changes in conditions of operation.

Among the newer methods of scale prevention is acid zeolite which liberates most of the potential carbon dioxide from the water. It is regenerated with sulfuric acid and is used in conjunction with normal zeolites which develop basic characteristics in the water and impart no silica to the water. Among this class of water-treating equipment is one using synthetic resins as the exchange material. It is considered to be in the experimental stage of development. Manufacturers of such equipment report that with the proper selection of exchange medium practically all of the salts in solution can be removed so as to produce virtually distilled water.

Standard hot lime-soda softeners have been made more effective; first, as to their efficiency through the use of coagulants to remove more completely the scale-forming salts before the water enters the boiler, and second, because the use of phosphate as internal treatment assures more complete removal of residual calcium and magnesium.

Colloidal treating compounds are receiving much attention at present. There are two general classes,—those which are oxygen scavengers primarily and those which combine with the organic material the commonly used salts of water treatment, sodium carbonate or the phosphate salts, as the basic reactive elements. In addition to these methods are a large variety of so-called electrolytic systems. Theoretically, such systems redirect the natural movement of ions away from the boiler metal. Actually, their successful operation in boilers has not been conclusively demonstrated, Fellows said.

Deaeration is the most common method used to combat oxygen. Sodium sulfite, colloidal iron, or organic materials such as the tannins, chestnut extracts, and others have been used to supplement this method. Sodium sulfite in particular has received much attention recently. There has been a fear that this salt might decompose in solution to produce a gas that when dissolved in condensed steam would prove to be corrosive. Present opinion of investigators is that when low concentrations are used, this decomposition will not occur.

Recently there has come to light several instances of a type of corrosion in which dissolved oxygen is not considered a factor. Evidence points to imperfect circulation as the fundamental cause and although this may be attacked chemically it is believed more logical to correct the circulation of the unit and insure equipment of having a heat-absorbing capacity great enough to prevent steam blanketing at the maximum combustion rate. Development of alloys resisting corrosion is, of course, another approach to the corrosion problem.

Formerly accepted methods of prevention of caustic embrittlement have been found frequently to be unreliable. New preventive measures are now under observation in service and it is hoped there will soon be available a solution to the problem.

*Mechanical Engineering, May, 1940.

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This one after 18 days of initial run

For a major oil company Lummus recently completed a Lummus Combination Three-Coil Cracking Unit . . . viscosity-breaking, gas oil and heavy naphtha reforming. » » » Eighteen days after the unit was put on stream it was completely accepted, having met all guarantees. The initial run was continued to 25 days, when the unit was shut down for inspection purposes. » » » This recently completed unit — the ninth consecutive Lummus Cracking Unit to be accepted during initial firing runs of 25 days or more — is equipped with Lummus Floor-Fired, Raised Hearth Heaters, with improved steam generation feature in the convection section. Provision is also made for steam generation from waste heat.

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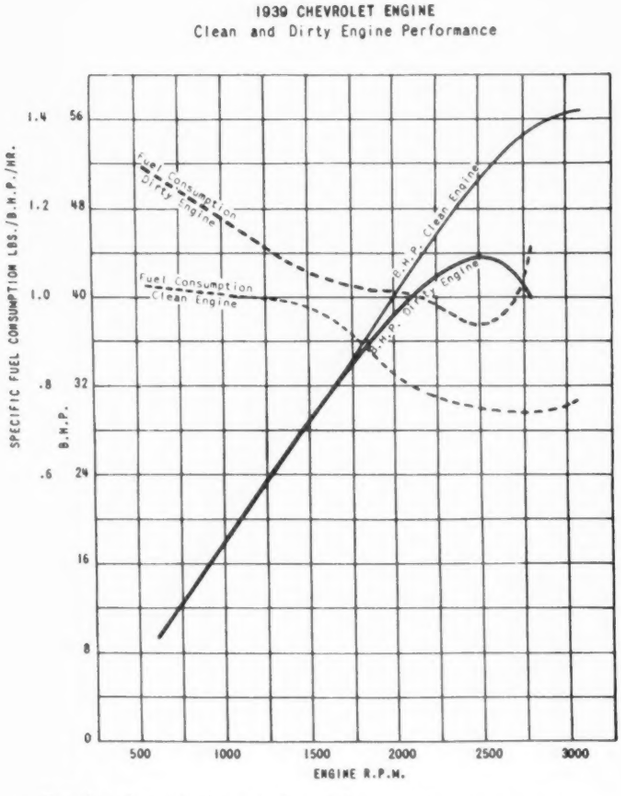
Detergent and Anti-Oxidant Lube Armor for Severe Duty

ABSTRACT

A Society of Automotive Engineers speaker at the Summer Meeting this week shows engine deposits can be inhibited by lubricant and fuel additives of the detergent and anti-oxidant type. Resulting "clean" engines improve performance and raise compression pressures. A valve expert finds at least half of valve troubles are caused by deposits traceable to oil and fuel. High quality lubricating oil, valve temperature control, and oil feed rate are among important factors in improving valve performance. An automotive engineer finds an increase in the power-weight ratio the sole answer to improving truck performance. Particular attention is given overcoming problems resulting from increasing compression ratios. The introduction of two-engine trucks is considered practical.



Graphical evidence of the difference in performance of a clean and dirty engine

TWO basic chemical changes in lubricating oils, resulting from high engine temperatures caused by increasingly severe engine conditions, are responsible for engine deposits and oil deterioration, Dr. C. M. Larson, chief consulting engineer, Sinclair Refining Co., told the Society of Automotive Engineers meeting at White Sulphur Springs, W. Va., June 9-14. These are coking and oxidation, both yielding to treatment by additives in lubricating oil or fuels. In the first instance deposits are dispersed by detergents such as calcium soap and oxidation is inhibited by various anti-oxidants.

Dr. Larson classified the causes of lubrication difficulties further by pointing out that high engine output is responsible for high temperatures in pistons and ring grooves where coke deposits are formed while high crankcase oil temperatures producing oxidation are a product of high engine speeds in certain instances.

Referring to the upward trend in engine power, Larson said that since 1937 compression ratios had increased about 7%, horsepower per cubic inch about 5%, brake horsepower 3%, and displacement had dropped about 2%. Particular attention was given to several engines whose top ring groove temperatures and crankcase temperatures covered a considerable range. Base on critical temperatures for oil oxidation, Dr. Larson presented the following table showing the relative detergent and anti-oxidant requirements of various engines based on severe duty engine service conditions:

Detergent and Anti-oxidant Requirements of Four Engines

Engine	Detergent %	Anti-Oxidant %
Caterpillar (single cyl.)	1.40	0.00
Chevrolet	0.25 -0.33	0.75
GMC 71 diesel	0.125-0.25	1.00
Winton 201 A diesel	0.00	0.50

The relatively drastic chemical formulas given in this table vary with the crude and type of treatment of the lubricating oil, Larson pointed out. Also detergents lower oxidation resistance generally so that more anti-oxidant is needed to counteract them when both are used in the same oil. SAE 30 oils are much more stable against oxidation than SAE 10 and 20 oils of the same crude and refinery treatment. The Gulf Coast low V.I. oils have greater detergent or dispersing action than the Pennsylvania or high V.I. oils and the anti-oxidant relationship is reversed.

Use Caution with Detergents

Larson warned that the dispersing action of a detergent in ring and top land deposits can be so complete that filters will not remove them and they will remain to cut the liners and bearings. On the other hand the anti-oxidant addition agent greatly assists removal of particles by filtration or settling in parts less apt to be injured. "The use of oils with detergents in engines which have piston land and ring groove deposits, without frequent draining periods of the first and/or second crankcase fill, always leads to cut bearings or cut liners and pistons. So far, changing from one detergent to another has shown no chemical effects in service."

The Underwood oxidation test was said to correlate

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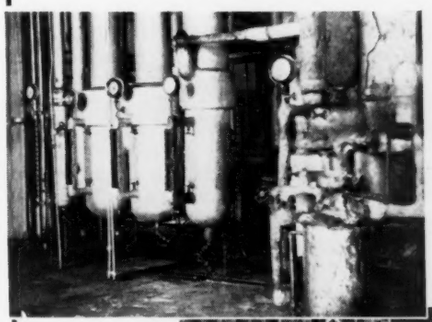
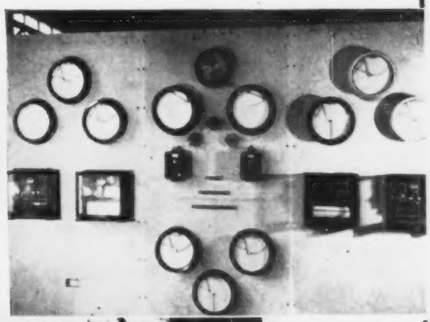
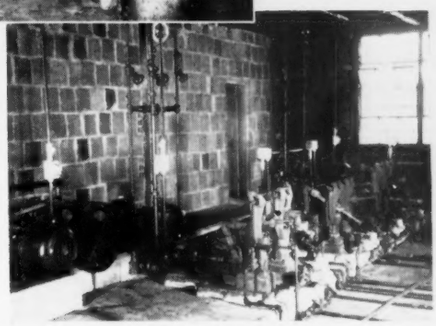


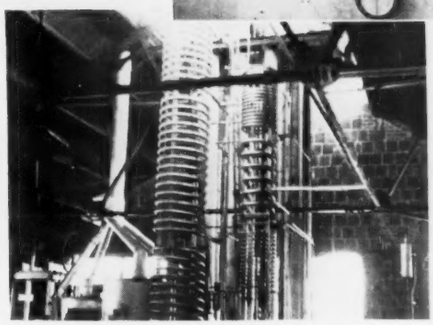
PILOT PLANT



Above — Base of cracking tower

Right — Battery of pumps





Above — Instrument control board

Left — Condensers and cooling system

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better with engine service where high crankcase temperatures are concerned. While this test is not ready for inclusion in specifications, it was said to have possibilities if truck fleet operators and engine designers will correlate their lubricating service test conditions to the Underwood tests.

What happens to specific fuel consumption and horsepower when the engine becomes dirty inside, with lacquer and carbon deposits on pistons and valve stems was partially illustrated in the accompanying graph of runs made on a clean and dirty Chevrolet. There was a noticeable drop in performance at higher speeds.

Tests to determine the effect of addition agents in fuels have also been made in numerous engines. In almost every case, the compression pressures were equalized upward, he said. Whether fuel additives will extend to the detergency type is yet a matter for extended testing. One problem in this connection has already come out where phosphorus oiliness agents reacted with tetraethyl lead to form lead phosphate and deposited on the exhaust valves.

There is going on today one of the most intensive studies of the oil and fuel problem in the petroleum, chemical and automotive industries ever witnessed in the field of severe duty engine conditions, Larson concluded. Each advance in the development of better oils enables further increase in the performance of high output engines.

* * *

Valve Trouble Half Deposits From Fuels and Lubricants

"Deposits on valve stems are today causing conservatively 50% of valve trouble in the automotive field," the real cause of which is apparently traceable to fuel and oil, it was stated by A. T. Colwell, Thompson Products, Inc., Cleveland. While aircraft valve trouble is proportionately far less than automotive, due to the engine and valve designs now in use and better control of fuel and lubricant, the greater proportion of aircraft valve trouble is also due to deposits.

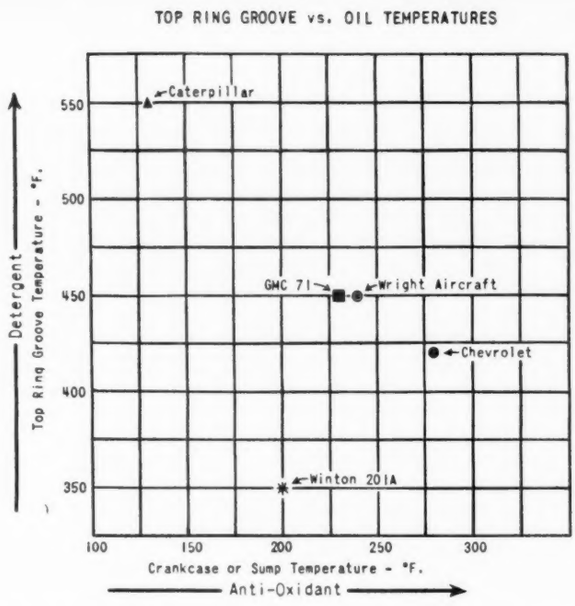
A complete solution of the build-up of deposits was said to be most difficult because any oil will oxidize or decompose at some temperature occurring along the valve stem. However, it has been proved that oils with good oxidation resistance at high temperature cause the least trouble, Colwell said. Although he dealt with the problem as one of design and showed numerous devices that have worked in reducing deposits, he concluded that insufficient research work has been done on the specific problem by those dealing with fuels and lubricants, and that it merits more study.

Colwell gave the results of a "fairly wide representative survey" which included a diversity of opinions and steps taken to improve this build-up condition. This diversity of opinions was interpreted as indicating that motors have individual characeristics for which no one standard procedure works, i.e., design which helped appreciably in one motor was of no help in another.

Solution of the problem by temperature regulation on the valve-stem is the logical approach of the designer, Colwell said, or to so meter the oil that the deposit formed is not thick enough to cause trouble between overhauls. A third alternative is to remove the deposit in some way as it is formed, such as by valve rotation or solvents.

Oil Feed Rate Important

The importance of the problem being much greater in aircraft, extensive test work has been done on aircraft engines and the quality of both fuel and lubricant is better controlled than in the automotive field. "The proper metering of oil to the valve-stem, with good circulation of oil in the rocker box, definitely reduces the deposit," Colwell said. "Sluggish oil in the rocker box, plus acid and water vapor aggravate varnish formation. Indications are that the worst build-up occurs with lean mixture operation. In some cases increasing the oil supply has been effective, as the condition was particularly bad with scanty oil supply. Too much oil also causes trouble, hence the aircraft procedure of metering the oil. In commercial operation these deposits seem to be worse in hot weather."



High temperatures in top ring grooves of pistons and in the crankcase are independent conditions depending upon design

Although the automotive status is more confusing, probably due to variable operating conditions, he said "shuttle driving causes the greatest trouble in some cases, whereas it is hard operation in others. Lean mixtures predominate in causing trouble, yet two positive instances indicate rich mixture." Colwell discussed a dozen measures which have been employed to reduce valve sticking, all but two of which had to do with design. One was flushing valve stems with solvents.

Just as in aircraft experience, it has been found that the amount of oil fed to valve stems is important. Too little oil will result in scuffing, while too much oil aggravates the deposit. The amount of oil should be metered for the particular engine, just as in aircraft engines, he said. Colwell showed a sectional view of one engine design in which a grease nipple is employed for intermittent pressure lubrication of the stems with 50% grease and 50% tallow. This system is effective on one manufacturer's large engines.

In test work conducted by Thompson Products, Inc., the deposits were strikingly different in quantity through the range of poor to good oil and fuel. He said the most effective way of forming the deposit is by continual starting and stopping and he pointed out that it is difficult to duplicate bad field deposits by steady running on the dynamometer.

* * *

Seek to Convert Lost Heat Energy into Power

An increase in the effectiveness of combustion of motor fuel in an engine operating under nonknocking conditions may result from studies now being made of unaccounted for heat energy in General Motors laboratories. In a paper presented by Lloyd Withrow and Walter Cornelius, it was stated that 19% of the heat energy liberated during an entire explosion is not accounted for in terms of pressure at the end of flame propagation. Since these losses occur near the beginning of the expansion stroke, they represent appreciable reductions in engine power and efficiency, dependent upon effective expansion ratio of an engine.

Under the conditions maintained for experiments

which were described (compression ratio of only 4.8 to 1) the complete elimination of the losses would change the thermal efficiency of the engine from 22% to 27% and would increase the mean effective pressure from 100 to 120 psi., it was concluded. To the motorist, such an increase could mean four to five more miles per gallon of gasoline if the heat loss can be turned into power.

The experiments made use of thermodynamic charts developed by H. C. Hottel and co-workers at Massachusetts Institute of Technology. They cover three sets of flame-picture and pressure data taken while operating a single-cylinder quartz-window engine on iso-octane and two sets of data while running on benzene. The fractions of the liberated heat energy accounted for at the end of the inflammation period in the respective explosions are considered to be estimates of the "effectiveness" of combustion.

Analysis of these data "promises to be an invaluable adjunct to the thermodynamic analysis," it was stated. "The most important fact brought out in this phase of the work is that the major part of the energy losses determined in each explosion occur in comparatively short time intervals soon after top dead center. This result is obtained regardless of whether the flame front regions are considered to be completely burned."

The fact that the maximum apparent rate of energy loss coincides in time with the maximum mass rate of combustion may be highly significant, it was said, because part of the heat of combustion must be converted into kinetic energy of motion of the several elements of the charge which are responsible for the flame turbulence. However, no attempt has been made to estimate the fraction of the combustion heat that is consumed in creating flame turbulence.

The authors concluded that present information permits no definite conclusions to be drawn about the mechanism of the energy losses shown by the analysis of experimental data. "The chief hindrance to increasing effectiveness of the combustion process is ignorance about the phenomena occurring during combustion and this can only be changed by carrying out better chosen and better executed investigations than have been carried out in the past." The possibility that the energy disappearance is due to storage of heat in the products of combustion was supported by emission spectrum of the afterglow radiation but would mean that CO_2 and H_2O molecules dissociate more than is required by the equilibrium constants used in developing the thermodynamic charts.

* * *

Increased Power in Trucks Available Over Three Routes

An increase in the power-weight ratio is the sole answer to the problem of improving truck and bus performance, Austin M. Wolf, well-known consulting engineer, told the Society. Three avenues of approach are available: increased power, conservation of power from present engines, and decreased tare weight.

Although the first impulse to attain greater engine output is to increase piston displacement, i.e., to employ larger engines, Wolf said a number of production engines have shown steady power output increases without resorting to changes in cylinder size or number where advantage is taken of higher compression ratios. Confidence was expressed in further increases in anti-knock value of gasoline to make this possible.

It was pointed out that hot exhaust valve heads and piston head valves have diminished enthusiasm for raising compression ratios. However, the sodium-cooled valve has increased valve life in heavy duty service and was said to have proven itself cheapest on a cost-per-mile basis. A valve of this type has a hollow interior into which sodium is sealed. Sodium becomes liquid just under the boiling point of water and valve motion facilitates transfer of heat from the head to the stem of the valve. Piston cooling remains to be produced practically, Wolf said, but laboratory results have already proven its worth.

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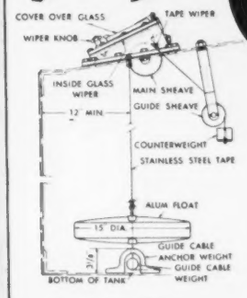

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New Patents

Compiled by R. E. Burnham, patent and trade-mark attorney, 511 Eleventh Street, NW, Washington, D. C., from whom copies may be obtained at rate of 25c each. State number of patent and name of inventor when ordering.

April 23, 1940

Apparatus for treatment of hydrocarbons—L. S. Gregory, Tulsa, assignor to Phillips Petroleum Co. Filed Oct. 11, 1937. No. 2,197,799.

Process of polymerization, and process for polymerizing unsaturated gases—Julius Hyman, Chicago, assignor to Velsicol Corp., same place. Filed Nov. 15, 1937, and Mar. 21, 1938. Nos. 2,197,861 and 2,197,862.

Treatment of hydrocarbons—G. S. Monroe and V. N. Ipatieff, Chicago, assignors to Universal Oil Products Co. Filed Sept. 23, 1938. No. 2,197,872.

Treatment of hydrocarbon oils—J. C. Morrell and W. L. Benedict, Chicago, assignors to Universal Oil Products Co. Filed Dec. 31, 1937. No. 2,197,873.

High pressure gas process (recovering desirable liquefiable constituents from gas)—W. H. Vaughan, Palestine, Tex., assignor jointly to Tide Water Associated Oil Co., Tulsa, and Seaboard Oil Co., Dallas. Filed Feb. 6, 1939. No. 2,198,098.

Extraction of gasoline from natural gas—H. N. Wade, Los Angeles, assignor to Parkhill-Wade, same place. Filed Jan. 4, 1938. No. 2,198,142.

Conversion of hydrocarbons—L. C. Rubin, West Caldwell, N. J., assignor to Polymerization Process Corp. Filed June 1, 1939. No. 2,198,180.

Process for reactivation of catalysts used in dehydrogenation of organic substances—H. P. A. Groll, Berkeley, and James Burgin, Oakland, Cal., assignors to Shell Development Co. Filed July 15, 1935. No. 2,198,195.

Distillation and stabilization process—D. G. Brandt, Westfield, N. J., assignor to Power Patents Co. Filed June 3, 1939. No. 2,198,263.

Apparatus for and method of selecting fractions from fractionating condensers—G. E. Wynn and R. G. Huggins, Tulsa, assignors to Mid-Continent Petroleum Corp. Filed June 16, 1939. No. 2,198,325.

Process for producing oils free of asphalt—Max Landau, Berlin-Wilmersdorf, Germany. Filed Apr. 29, 1938. No. 2,198,388.

Removal and recovery of solvent, and solvent extraction of oil from oleaginous material—Dan McDonald, Los Angeles, assignor to Engineering Inc. (Cal.) Filed Jan. 2, 1935, and Feb. 8, 1937. Nos. 2,198,412 and 2,198,413.

Process for treatment of light distillates—Morris Levine, Pampa, Tex., assignor to Danciger Oil and Refineries, Inc. Filed Nov. 27, 1936. No. 2,198,545.

Recovery of lubricating oil from acid sludge—J. B. Synnott, Jr., Port Arthur, Tex., assignor to Texas Co. Filed May 10, 1938. No. 2,198,566.

Manufacture and lubricating oil and production of lubricating oils—F. X. Govers, Vincennes, Ind., assignor to Indian Refining Co. Filed Feb. 27, 1936, and Sept. 24, 1934. Nos. 2,198,575 and 2,198,576.

Polymerized hydrocarbon composition, and lubricant and process of making—Mathias Pier and Friedrich Christmann, Germany, assignors to I. G. Farbenindustrie. Filed Jan. 14, 1933. Nos. 2,197,768 and 2,197,769.

Motor fuel—M. A. Dietrich, Claymont, Del., assignor to E. I. du Pont de Nemours & Co. Filed Aug. 12, 1938. No. 2,197,851.

The following to Socony-Vacuum Oil Co. as assignee of the inventors:

Extreme pressure lubricant—D. E. Badertscher and H. G. Berger, Woodbury, and F. M. Seger, Pitman, N. J. Filed Dec. 1937. No. 2,197,781.

Mineral oil compositions—O. M. Reiff, Woodbury, N. J. Filed May 7, 1938. Nos. 2,197,832 and 2,197,833.

Mineral oil composition—Reiff, and J. J. Giammaria, Riverside, and H. E. Redman, Woodbury, N. J. Filed May 26, 1938. No. 2,197,834.

Mineral oil composition—Reiff. Filed Aug. 3, 1938. No. 2,197,835.

Mineral oil composition—Reiff, and E. M. Johnson, Woodbury, N. J. Filed Oct. 8, 1938. No. 2,197,836.

Mineral oil composition—Reiff. Filed Dec. 21, 1938. No. 2,197,837.

Mineral oil composition—Reiff, and F. P. Otto, Philadelphia. Filed Sept. 12, 1939. No. 2,198,274.

Mineral oil composition and improving agent therefor—Reiff, Otto, and Giammaria, and E. A. Oberright, Woodbury, N. J. Filed Oct. 18, 1939. No. 2,198,275.

Mineral oil composition, and mineral oil composition containing wax-aryl ether acids—Reiff and Otto. Filed Sept. 14 and Aug. 26, 1938. Nos. 2,198,292 and 2,198,293.

Lubricant—G. A. Hope, Brooklyn, W. L. Linton, Bayside, and M. F. Pratt, New York. Filed Nov. 30, 1937. No. 2,198,307.

Resinous material—A. N. Sachanen and P. G. Waldo, Woodbury, N. J. Filed Jan. 12, 1938. No. 2,198,318.

* * *

April 30, 1940

Process for converting hydrocarbons—F. E. Frey, P. V. McKinney, and W. H. Wood, Bartlesville, assignors to Phillips Petroleum Co. Filed Oct. 11, 1934. No. 2,198,937.

Motor fuel—C. M. Hull, Chicago, assignor to Standard Oil Co. (Ind.) Filed Dec. 31, 1937. No. 2,199,132.

Conversion of hydrocarbon gases—R. F. Marschner, Chicago, assignor to Standard Oil Co. (Ind.) Filed Jan. 6, 1938. No. 2,199,133.

Process for conversion of normally gaseous mono-olefins to normally liquid products—K. C. Loughlin, Baton Rouge, assignor to Standard Oil Development Co. Filed Jan. 13, 1937. No. 2,199,180.

Manufacture of lubricating oils—Goethel, Schaller, and Tramm, Germany. Filed Oct. 24, 1936. No. 2,199,200.

Purification of petroleum phenols—J. J. Owen, Baton Rouge, assignor to Standard Oil Development Co. Filed Mar. 30, 1939. No. 2,199,208.

Compounded lubricating oil—P. J. Gaylor, Elizabeth, J. C. Zimmer, Hillside, and A. J. Morway, Roselle, N. J., assignors to Standard Oil Development Co. Filed Nov. 6, 1936. No. 2,198,851.

Lubricant—M. A. Dietrich, Claymont, Del., assignor to E. I. du Pont de Nemours & Co. Filed Apr. 5, 1938. No. 2,198,961.

Mineral oil composition (containing gum inhibitor) and process of producing—T. W. Bartram, Nitro, W. Va., assignor to Monsanto Chemical Co. Filed Feb. 12, 1936. No. 2,199,021.

Stable petroleum product—C. M. Loane and B. H. Shoemaker, Hammond, Ind., assignors to Standard Oil Co. (Ind.) Filed Dec. 13, 1937. No. 2,199,108.

Lubricating emulsion—R. C. Williams, Columbus, assignor to Ironsides Co., same place. Filed Oct. 23, 1935. No. 2,199,146.

Lube oil addition agents—Raphael Rosen, Elizabeth, N. J., assignor to Standard Oil Development Co. Filed July 24, 1937. No. 2,199,187.

Lubricating oil and method of preparing—C. C. Towne, Beacon, N. Y., assignor to Texas Co. Filed Mar. 23, 1936. No. 2,199,352.

Sulphur compounds and method of synthesizing same—B. H. Lincoln and G. D. Byrkit, Ponca City, assignors to Continental Oil Co. Filed June 16, 1937. No. 2,199,361.

* * *

May 7, 1940

Hydrocarbon reactions—Ipatieff and Pines, assignors to Universal Oil Products Co. Filed Dec. 18, 1937. No. 2,199,564.

Catalyst regeneration—E. V. Murphree, assignor to Standard Oil Development Co. Filed Mar. 18, 1938. No. 2,199,837.

Catalyst regeneration — Tyson and Hemminger, assignors to Standard Oil Development Co. Filed Aug. 13, 1937. No. 2,199,838.

Method of treating hydrocarbon mixtures—G. E. R. Saleh, New York, N. Y. Filed May 21, 1935. No. 2,199,841.

Art of refining hydrocarbon oils—John Walsko, assignor to Sinclair Refining Co. Filed Mar. 21, 1938. Nos. 2,199,930 and 2,199,931.

Process for treating synthetic lubricating oils—Hendrikus Stokman, Amsterdam, Netherlands, assignor to Shell Development Co. Filed Mar. 7, 1938. No. 2,199,940.

Method of recovering spent filter clay—P. D. Barton, assignor to Sun Oil Co. Filed Mar. 29, 1938. No. 2,200,145.

Anhydrous lubricant—M. T. Flaxman, assignor to Union Oil Co. (Cal.) Filed Aug. 20, 1938. No. 2,199,695.

Lubricant—Van Peski and van Melsen, Amsterdam, Netherlands, assignors to Shell Development Co. Filed May 25, 1936. No. 2,199,944.

* * *

May 14, 1940

Converting heavy mineral oils into lighter oils—C. M. Alexander, assignor to Gyro Process Co. Filed Apr. 5, 1924. No. 2,200,463.

Processes for refining hydrocarbon oils—R. P. E. Retailliau, assignor to Shell Development Co. Filed May 18, 1938. Nos. 2,200,703 and 2,200,704.

Process for refining naphthenic acids—H. R. Berry, assignor to Shell Development Co. Filed June 24. 1939. No. 2,200,711.

Process for separating hydrocarbon oils—Ernst Bosing, Berlin, Germany. Filed Aug. 17, 1938. No. 2,201,120.

Method and composition for improving Diesel fuel ignition—A. Burton, assignor to Standard Oil Co. (Cal.) Filed May 1, 1939. No. 2,200,260.

Asphaltic composition and method of preparing—A. H. Batchelder, assignor to Standard Oil Co. (Cal.) Filed Apr. 5, 1938. No. 2,200,484.

Low pour point lubricating oil—U. B. Bray, assignor to Union Oil Co. (Cal.) Filed Apr. 19, 1932. No. 2,200,534.

Manufacture of improved asphalt—Burk and Whitacre, assignors to Standard Oil Co. (Ohio) Filed July 14, 1938. No. 2,200,914.

Hunting Best Aviation Fuel Components

An investigation is in progress to determine what hydrocarbons have the most promise as constituents of the optimum synthetic aviation gasoline. The properties of the branched-chain paraffins are being studied by the National Bureau of Standards in co-operation with the National Advisory Committee for Aeronautics, the Bureau of Aeronautics of the Navy Department, and the Army Air Corps.

A number of paraffins have been isolated from industrial synthetic crudes by means of high-efficiency fractionating columns, designed by the Bureau of Standards, which operate continuously with automatic control. Other paraffins have been synthesized by standard methods and research on new methods is in progress. The hydrocarbons yet to be prepared are mainly nonanes and decanes. The work is reported in the 1939 report of the Bureau of Standards.

No Clue to Knocking

Normal burning of certain hydrocarbons gave no clue as to their relative tendency to knock in an engine it has been determined in tests made by the National Advisory Committee for Aeronautics. Simultaneous measurements of the flame travel and rise in pressure during explosions of carbon monoxide, benzine, n-heptane, and iso-octane mixed with oxygen or oxygen diluted with nitrogen, were made in a spherical bomb. The results, given in the annual report of the National Bureau of Standards, showed also that the reaction continues for a considerable distance behind the flame front.

NATIONAL PETROLEUM NEWS

ANNOUNCES—

A Co-operative Educational Campaign With Oil Marketing Management To Give America's Motorists BETTER LUBRICATION This Summer of 1940 . . . . .

To Further this objective of improved oil industry service NPN Recommends that ALL Oil Marketing Men Use This SALES SLOGAN . . . . .

National Petroleum News Engineering Survey Shows—

For SAFETY'S SAKE

LUBRICATE EVERY 1,000 MILES

This Summer

In support of this campaign NPN will publish a series of engineering and sales articles that will run all summer. These articles will supply oil marketers with the latest engineering data on the need for frequent lubrication of engine and chassis of cars and trucks, and the best sales ideas for presenting this data.

On the following pages are the details of the campaign.

The Need for This Educational Campaign For Better Lubrication

All who have contact with the average American motorist know that he is suffering unnecessary losses by his own thoughtlessness and indifference to proper lubrication and care of his car.

Despite the handy and inexpensive facilities and services that are available to him, the average car owner keeps putting off proper servicing. So increasingly easier has it become for a motorist to slide along another few hundred or thousand miles that the trend is for more and more miles between services, regardless of the severity of the use given the car.

Indication as to this indifference to proper service by most motorists is given by two surveys, for illustration—

> In 1936 a survey of car owners showed that 76% had their cars serviced with oil and grease at less than 1500 miles, with most of them between 1000 and 1500 miles.
>
> But in 1938 only 49% had their cars lubricated and oil changed at 1500 miles or less, while 30.9% were serviced at more than 2000 miles with 17.7% admitting to servicing at from 2500 to 5000 miles. Then there were 2% who did not get fresh lubrication "very often" and 3.9% who "never changed" their oil or got complete lubricating service.

Yet, in the meantime, the American car and its engine are being machined to smaller and smaller tolerances; are being put to higher and higher speeds and in all kinds of weather; are operating at higher temperatures and with greater engine compression.

So disturbed are the oil industry's lubricating engineers and so fearful that the industry may receive blame for contributory negligence to the accelerated depreciation of their customers' big investment, that the American Petroleum Institute has organized a special, but permanent, committee on Lubrication. This committee has been given sufficient funds to carry on extensive scientific investigations and it has employed as its chief executive officer a well known oil industry lubricating engineer.

This Lubricating Committee's broad program calls for a thorough study of car lubrication and full cooperation with the automobile engineers in working out the mutual problems of the two industries. The first recommendation of this committee for more frequent lubrication is published as a part of this announcement in this issue.

In the words of R. A. Ludlow, director of the API Lubrication Committee:

> "Our plan is to insure the American Motorist of the safe and satisfactory functioning of his car. It is a plan to promote for the car manufacturer an undertaking which will assure him that his customers will enjoy satisfactory use of the cars he sells. This plan will mean more business for the automobile industry because of the more rapid turnover of and better profits from the trading-in of used cars in better condition. This plan calls for a nationwide program designed basically to improve car operation."

NPN's lubricating educational campaign is in hearty support of the program of the API's Lubrication Committee.

Why the "1,000 Miles" Measure Was Selected For the Campaign's Sales Slogan

Most automobile manufacturers recommend chassis lubrication every 1000 miles. As to engine oil change their recommendations run all the way from 1000 miles to 10,000 miles. This wide variation in engine oil recommendations is undoubtedly an important cause for the car owner's carelessness in not getting LUBRICATION at regular intervals.

Just exactly WHEN the engine oil should be changed on a car is a subject of considerable debate among automobile and lubricating engineers. They agree that the time—in miles run—varies as to the use of the car, the extent of dust in the atmosphere through which it has been driven, the speed driven, how driven—whether "stop and go" or at high speed continuously—the physical condition and many other factors bear on just when the car should be re-lubricated.

In fact to determine the precise moment when a car should be reserviced calls for a most exact and painstaking series of laboratory tests and examinations.

As laboratory tests are out of the question for a service station to determine when each car should receive lubricating attention, and no simple gadget has yet been devised that can be supplied to every station to tell on the instant the condition of an engine and all the car's bearings, we come to the old fashioned measure of miles driven.

As to the number of miles driven before a car should be lubricated, there is no agreement among experts. However the chief thing is to get a formula that is most likely to work. The main object is to get the car actually lubricated ENOUGH and not err on the side of having it lubricated TOO LITTLE or perhaps not at all. TOO MUCH lubrication will not damage a car while TOO LITTLE will ruin it. The former will cost

A sure thing

When a refiner installs Dubbs-cracking for the first time he is taking no chances—he knows what it will do for him

When a Dubbs refiner increases his cracking capacity he has *proved* what Dubbs-cracking does for him

Either way it's a wise decision

And it's wise to install U. O. P. catalytic polymerization, too

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

the motorist only a few extra dollars a year while the latter will cost him a few hundreds of dollars or even the price of a new car.

So thinking of WHAT FORMULA is MOST LIKELY TO WORK with the AVERAGE MOTORIST and what will most likely give ENOUGH lubrication, NATIONAL PETROLEUM NEWS recommends "1000 MILES."

The car owner is told by his manufacturer to lubricate the chassis every 1000 miles;

1000 miles is an easy figure to remember;

1000 miles is an easy figure to note on the speedometer and many trip speedometers run to that number nowadays;

1000 miles, engineers agree, AT LEAST IS NORMALLY SAFE, except where one has been in extremely dusty conditions—such as in a dust storm—or is stopping and starting frequently in winter and with the aid of the fuel creating a sludge of an acid character;

1000 miles at least will not be TOO LONG a time to forego lubrication.

So NATIONAL PETROLEUM NEWS recommends as this summer's sales slogan and to permit the oil industry to render the best service to its nearly 30,000,000 customers "FOR SAFETY'S SAKE—LUBRICATE EVERY 1000 MILES—This SUMMER."

If this period should turn out to be too short a one, it will not be very much too short and the extra cost to the motorist for the few additional quarts of oil, or pound or two of fluid and or few ounces of grease, will be but a couple of dollars at the most—little enough to insure that the motorist has NO ENGINE trouble and that he keeps all his bearings in the BEST OF CONDITION. If it is too long a period, general opinion is still no very serious damage is likely to be done.

As we go to press with this launching of the Lubricating Campaign, the Lubrication Committee of the American Petroleum Institute, releases its recommendations to the oil industry and the car owner. This committee recommends a lubricating interval of from 1000 to not more than 1500 miles for general driving conditions. The committee recommendations are printed in full in this presentation.

So, until the experts can work out a recommendation that is more practical in its application and that will better PRESERVE the CARS for the American Motorists . . . NPN is launching this campaign for the oil industry, that in its daily contacts with the automobile owners, it will recommend, at least for this summer and fall,

"FOR SAFETY'S SAKE—Lubricate EVERY 1000 Miles—this Summer."

Put This Sales Slogan

On the Tongue of Every Station Attendant This Summer of 1940

To help the oil industry to adopt and TO USE this Lubricating SALES SLOGAN at EVERY Service Station and Lubritorium in the country this summer, NATIONAL PETROLEUM NEWS is launching this special editorial campaign. It also is urging its advertisers to support the campaign by tying their advertising copy for their oils and equipment into it.

NATIONAL PETROLEUM NEWS Editorially will tell WHY more frequent Lubrication is needed . . . will offer evidence to prove the need for service every 1000 miles . . . and it will tell how this frequency of lubrication can be brought about with modern sales methods.

The advertisers will tell how their oil and equipment can best be used to INCREASE Sales and to convince the car owner that he should lubricate oftener—"For Safety's Sake, Every 1000 Miles This Summer."

Much of the success of this 1940 Summer LUBE OIL SALES Campaign will depend on the adoption and proper use of the Modern Sales Tools and Modern Equipment offered those in oil marketing by both refiners and equipment manufacturers. This is a teaching job that the advertisers will do.

This joint Editorial and Advertising campaign is addressed to the MANAGEMENT of Oil Marketing, to the men whose responsibility it is to see that the Sales Talks are not only given but actually used from day to day and from customer to customer at every pump island.

Selling Lubrication is one activity where the more who join the better will be the EDUCATIONAL JOB done on the car owner. The MORE SALES will be made. The results are cumulative. The *average car* will never be lubricated as much as it should be, so there always will be a CREATIVE SALES Job to be done. No matter how good the selling, the possibilities of the market will never be exhausted.

LUBRICATION SELLING
Is not CHISELING Business from a Competitor,—
But it is *CREATING NEW BUSINESS.*

NO OTHER PUMPS

Can Give You ALL These Advantages!

NATIONAL *Computapex*

WITH THE TYPE OF HOSE EXTENSION YOU REQUESTED

MECHANICALLY CORRECT

$5.65 DOWN
3 YEARS TO PAY

EVERY YEAR there's one car and one pump that gives you more for your money. This year that pump is the National Pump with the type of Hose Extension you requested! Read all these advantages:

LOWER ORIGINAL COST . . . LOWER REPLACEMENT COST. (Should hose replacement become necessary, only 10′ or 11′ length of standard ¾″ hose is involved instead of 14′ or 16′ length.) **SIMPLICITY** (no enclosed mechanism, couplings or seals to cause maintenance expense.) **NO SHARP BENDS** which tend to gradually break or cut hose. **NO PARTIAL COLLAPSING OF HOSE** as occurs with hose reels, drums or hooks. **MORE ACCURATE** (Accuracy of delivery not affected through operation of this device.) **CHANGE BACK** to regular style National Computapex can be made if desired. **DOESN'T TIRE ATTENDANT** (Most service within 10 to 12 ft., which is well within the "no pull area.") **SPEEDIER SERVICE!** (No waiting for hose reel to wind and unwind, no troublesome spring recoil or catches, no cable retrieve.) Write for complete details and prices today. National Pumps Corp., Cincinnati, O.

Editorial Outline of Articles to Help Oil Marketing Protect the Motorist With Sufficient LUBRICATION This Summer of 1940

"For Safety's Sake . . .
LUBRICATE EVERY 1000 MILES THIS SUMMER"

June 26 Issue

Technical reasons for changing motor oil during hot weather driving.

(a) Data on effect of dust in crank case and data on formation of sludge which makes "varnish" on valves and piston rings.

(b) Effect of high outside temperatures and driving speeds on temperature of engine parts . . . how these temperatures have increased in recent years and subject lubricants to greater demands.

July 10 Issue

Proof of Damage from Poor Lubrication.

Data on what happens when lubrication is insufficient in the new types of bearings and with new alloy metals used in today's engines. Photographs of worn bearings, etc.

July 24 Issue

Selling Reasons and Methods.

Latest ideas and practices for making MORE sales of car lubricating jobs at the station. New arguments that have convinced motorists . . . selling different classes of car owners.

August 7 Issue

How Equipment and Station Modernization Has Actually Helped Sales.

Case studies of individual stations that have installed the latest in modern lubricating equipment will be made and the results of this modernization in INCREASED SALES reported.

August 21 Issue

Bringing the Motorist Back for Re-Oiling.

No matter how much MANAGEMENT keeps pounding on station follow-up the average follow-up system is not worked the way it should be. August is a good time to tell HOW to work those systems and the jobs that can be gotten in.

How You—The READER—Can Apply This Campaign To Your Business

● This Editorial Program will keep the subject of MORE OIL SALES before the entire oil industry all this summer.

This Editorial Program will supply actual SALES FACTS that can be used in daily selling at the pump island and by mail and phone to all car owners.

Posters bearing NPN's Sales Slogan, are available for you to hang before all your salesmen and in every service station. With the posters NPN will supply handy size reprints of these sales articles as they appear to keep your salesmen and station attendants and dealers informed of the campaign.

The chief aim of the Posters and Reprints is NOT to sell the car owner but to help you—THE MANAGEMENT—to cause the station attendants to do their sales jobs ON EVERY PROSPECT.

The GREAT problem in selling lubrication is to get the sale STARTED and then FINISHED at the service station.

The car owner knows that he should change his oil. He has read the consumer advertising about the need for it and the quality of different oils. BUT the CAR OWNER JUST DOES NOT GET IT DONE.

Recent checks of car owners show that 74% of the Motorists WANT to have their oil checked when they come in the station.

BUT 53% leave the drives without GETTING their oil checked.

And one half the time the station attendant does check the oil he puts the bayonet back without showing it to the customer and *saying anything* about oil change.

An NPN editorial man on a recent drive from Los Angeles to Cleveland stopped 39 times for oil and gasoline BUT he was only asked to buy oil 10 times. NOT ONCE was he asked to buy a complete lubricating job. He had to FORCE that sale on the station attendants.

Out of every 100 cars stopping for gasoline 40 need oil and 10 will buy complete oil change, if it is called to their attention.

Oil Marketing MANAGEMENT has told station attendants and dealers time and again to keep SELLING lubrication to every gasoline customer. But Oil Marketing MANAGEMENT often forgets that the attendants are human and FORGET . . . just as oil marketing MANAGEMENT forgets to keep telling the attendants.

Oil Marketing MANAGEMENT needs to have its view kept fresh, and its enthusiasm as to the possibilities of oil sales maintained at the highest.

So NPN's Editorial Campaign this summer is aimed to help Oil Marketing MANAGEMENT to keep all of its assistants and associates on the alert with good, hard selling facts on car lubrication . . . as well as to not let OIL MANAGEMENT forget that it too must keep itself fully aware that constant daily, even hourly, supervision is necessary for a successful sales campaign.

This is the year of the LARGEST NUMBER of Customers who will need the MOST Oil and Grease . . . because the U. S. has the most cars on the road in its history, and driving the most miles.

More than ever before these Oil Industry Customers need the slogan

"FOR SAFETY'S SAKE—Lubricate EVERY 1000 Miles—this Summer."

USE
CHAMPLIN
OILS
Order Spring and Summer
HEAT - RESISTING
Lubricants Now!
CHAMPLIN
Refining Company

API Lube Experts Urge 1,000 Mile Oil Change

The new lubrication committee of the American Petroleum Institute at a meeting at New York Wednesday June 5th, with the approval of the API General Marketing Committee recommended the following as good practice in present car lubrication,—

FOR SUMMER—Change engine oil under average operating conditions every 1,000 miles . . . oftener under adverse conditions . . . and at least every 1,500 miles under the most favorable conditions.

FOR WINTER—For ordinary "stop and go" driving,—
In temperatures below 10 deg. F. change oil every 2 weeks.
In temperatures from 10 deg. F. to 32 deg. (freezing) change oil frequently.

With these reasonable good practice recommendations the committee submits in detail the engineering and chemical reasons for the recommendations. The committee points out most definitely that it recognizes widely varying operating conditions as to individual cars but the committee believes that a standard of general good practice is needed and will work to the best interest of the car owner.

In issuing the oil change recommendations the committee made the following statement:

Program of Lubrication Committee of General Committee—Division of Marketing

"OBJECTIVES

"1. Recommendations and development of sound oil-change practice within the Petroleum Industry and through co-operation with the Automotive Industry.

"The Lubrication Committee at its meeting approved of the following as its official recommendation. This recommendation is in general in accord with recommendation made by a group of oil men who constituted themselves as a Committee on Oil Change Practice before the Lubrication Committee of the American Petroleum Institute was formed and which Committee's recommendations were approved and issued by the American Petroleum Institute.

"2. Development of periodic chassis lubrication within the Petroleum Industry and through co-operation with the Automotive Industry.

"3. Clearance of lubricating information between Automotive and Petroleum Industries.

"4. Representation to the American Automobile Association and other recognized associations concerned with lubricating matters.

"5. Clearance with American Petroleum Industries Committee on Federal and State legislation as affecting lubricating products.

"In carrying on our program, we have appointed a Technical Advisory Sub-Committee and a Grease Advisory Sub-Committee to advise us on subjects of lubrication as they arise and to assist in contacting the Automotive Industry.

"We have prepared a slide film, booklet and leaflet for review and approval of the General Committee—Division of Marketing. Upon approval, the Lubrication Committee will arrange for distribution throughout the Industry at cost."

The Lubrication Committee of the API was created at the last annual meeting of the API last fall. It was the outcome of the activities of a liaison committee between the lubricating engineers of the oil industry and the engineers of the automobile and truck companies. The work was found to be so great that the committee was put on a permanent basis, funds supplied and a full time staff created headed by R. A. Ludlow, well known oil industry lubricating engineer and for many years with the Richfield Oil Co. at New York.

The lubricating committee of the American Petroleum Institute is as follows:

Wm. H. Correa, Socony-Vacuum Oil Co., Inc., 26 Broadway, New York, chairman.

L. C. Welch, Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago, vice-chairman.

Dayton P. Clark, Gulf Oil Corp., Pittsburgh, secretary.

R. A. Ludlow, American Petroleum Institute, 50 W. 50th St., New York, N. Y., director.

K. Baker, J. D. Streett & Co., St. Louis.

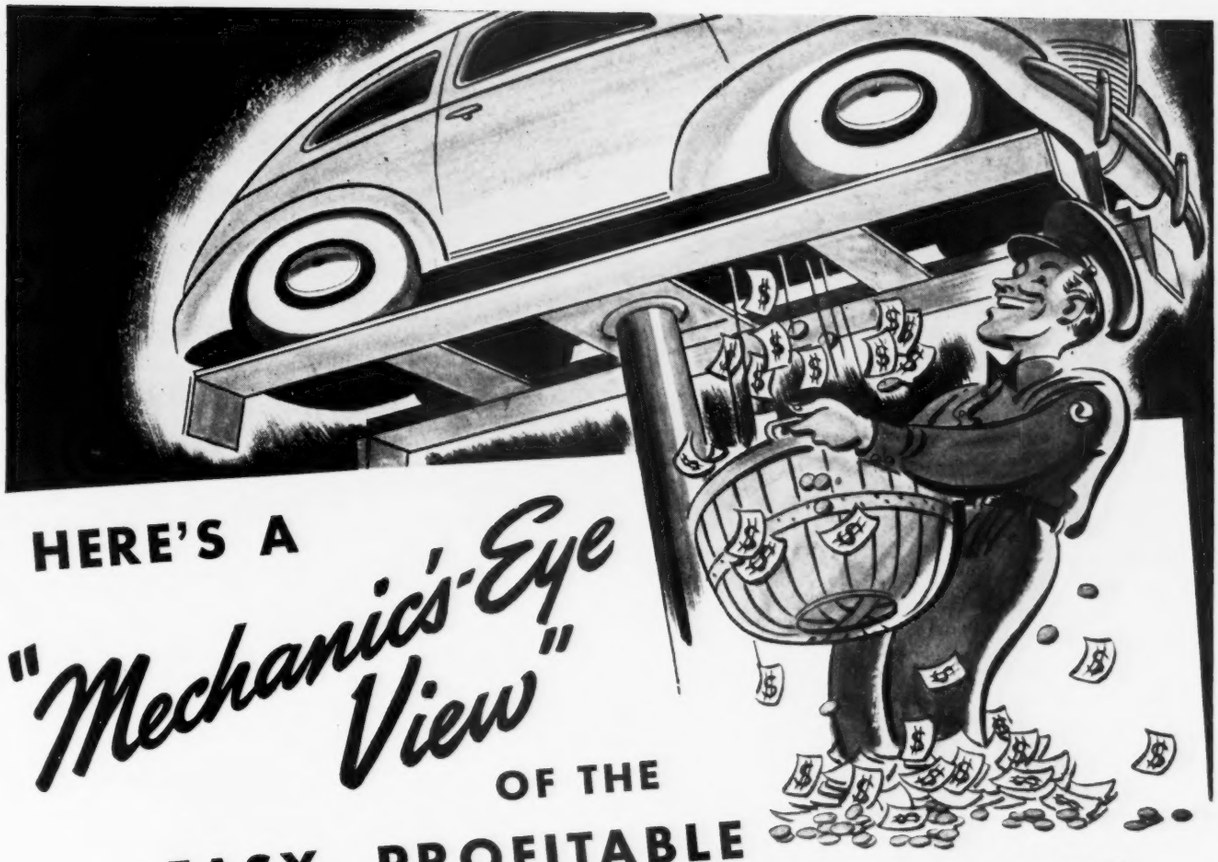
M. R. Bower, Standard Oil Co. (Ohio), Cleveland, O.

M. B. Chittick, Pure Oil Co., Chicago.

R. Cubicciotti, Union Oil Co. of Calif., Los Angeles.

John C. Day, Western Petroleum Refiners Assn., Tulsa.

(*Continued on page* 34)



HERE'S A "Mechanic's-Eye View" OF THE EASY, PROFITABLE DELCO SHOCK ABSORBER SERVICE

Every time you get a car on a hoist or over a pit for lubrication, brake adjustment, or any other service that gets you "down under," you're right in position to "clean up" on an *easy, profitable* service job that you *can't afford to overlook*. The Delco Hydraulic Shock Absorber Service is a natural for any station with a hoist or a pit.

Easy? There's nothing to Delco Shock Absorber Service, now that you can get complete service instructions for refilling and rebushing . . . a new rebushing tool that lets you rebush nearly every type of Delco Shock Absorber without removing the shock absorber from the car—and the Delco Shock Absorber Exchange Plan for taking care of non-repairable types.

Profitable? More than 15,000,000 cars on the road today are equipped with Delco Hydraulic Shock Absorbers, and, like all shock absorbers, they occasionally require inspection, refilling and external service to keep them operating quietly and satisfactorily. The equipment required is small—the market is big—and the service is easy. See your United Motors distributor today, or write direct to United Motors Service, General Motors Building, Detroit, Michigan.

COMING SOON! A HERLOCK SHOLMES MYSTERY THRILLER!

You'll want to see the new Delco Shock Absorber film, "The Case of the Missing Shock Business," with the great detective in a new role!

UNITED SERVICE MOTORS

Delco shock absorbers and genuine service parts are available through a large group of independent distributors served by 21 United Motors warehouses.

DELCO HYDRAULIC SHOCK ABSORBERS

J. M. Evans, Tide Water Associated Oil Co., San Francisco.
H. P. Hobart, Gulf Oil Corp., Pittsburgh.
W. L. Holmgren, W. H. Barber Co., Minneapolis.
P. V. Kane, Sun Oil Co., Philadelphia.
F. C. Kerns, The Texas Co., New York.
J. M. Koch, Quaker State Oil Refining Corp., Oil City, Pa.
J. H. Lee, Shell Oil Co., Inc., New York.
H. G. Vesper, Standard Oil Co. of California, San Francisco.
L. P. Lochridge, Sinclair Refining Co., New York.
George P. MacDonald, Richfield Oil Corp., New York.
R. W. McDowell, Mid-Continent Petroleum Corp., Tulsa.
E. V. Moncrieff, Swan-Finch Oil Corp., New York.
J. E. Moorehead, Pennsylvania Grade Crude Oil Assn., Oil City, Pa.
William M. Murray, Deep Rock Oil Corp., Chicago.
E. G. Richardson, Shell Oil Co., Inc., St. Louis.
J. Walter Saybolt, Standard Oil Co. of New Jersey, New York.
Raymond Shaw, The Chek-Chart Corp., Chicago.
D. B. Spanogle, Atlantic Refining Co., Philadelphia.
O. J. Tuttle, Cities Service Oil Co., Chicago.

Recommended Practice for Crankcase-Oil Change In Passenger Motor Cars

Issued June 5, 1940 by the Lubrication Committee of the American Petroleum Institute.

Summer

The frequency of summer draining depends largely upon car speed, atmospheric temperature and the rapidity with which dust and other contaminants accumulate in the crankcase.

In general, crankcase oil should be changed every 1,000 miles, the exact interval depending upon the severity of operating conditions.

Where dust storms are encountered, crankcase oil should be drained immediately after leaving the dust area, regardless of mileage. Air cleaners also should be cleaned thoroughly at the same time. When cars are operated regularly in dust areas, the crankcase oil pan should be dropped and cleaned frequently.

Under the most favorable conditions, a car may be driven safely as much as 1,500 miles before draining. However, it should be realized that abrasive dust is always present, and that gradual contamination of crankcase oil is always taking place.

While cars are occasionally driven further without apparent damage, the saving in oil cost per year is too small to be considered in comparison with the possible sacrifice in engine protection and efficiency.

Winter

The severity and duration of cold weather, the number of engine starts in a given period, and the amount of idling largely govern the rapidity with which crankcase oil becomes contaminated in winter.

For cars operating at temperatures below freezing, oil should be drained *at least every* 500 *miles.*

Where atmospheric temperatures consistently below 10 deg. F. are encountered, and cars are operated on short runs with many stops and starts or with prolonged idling, draining should be on a time rather than a mileage basis. Under such conditions, oil should be changed at least every two weeks.

When temperatures below zero are consistently encountered, crankcase temperatures may be abnormally low. Under such extreme conditions, the oil may become dangerously contaminated and require draining after a few days' use.

Reasons for Crankcase-Oil Changes

The essential reasons for changing crankcase oil may be stated as follows:

1. *Water contamination:* It is a fact, not commonly known, that more than a gallon of water is produced in an engine by the burning of one gallon of gasoline. This water is ordinarily in the form of vapor or steam; but, when the jacket-water temperatures are low, some of this water condenses and gets into the crankcase.

This condition is accentuated by low air temperatures, and becomes extremely rapid in sub-zero weather. It is particularly acute when short runs and frequent starts are necessary, as is the case with cars used by physicians, inspectors, and salesmen. The same applies to motorists who use their cars only for going to and from work.

Under these conditions, while the jacket-water temperature may reach a normal range, the crankcase remains cold, and water in it is not driven off by evaporation.

For winter operation, this accumulation of water is the major factor in oil deterioration, because, almost invariably, it mixes with the oil to form a thick, mayonnaise-like emulsion. Leakage of anti-freeze solution from the cooling system into the engine greatly accentuates the formation of emulsions. These often interfere with normal lubrication, leading to disastrous results.

During the cold period of every winter, a large number of cases are encountered in which bearings, pistons, and cylinder walls are ruined because the lubricating systems become clogged by emulsions. Serious damage also has occurred from water freezing in crankcases when cars are left standing exposed to low temperatures.

2. *Oil Dilution:* Winter operating conditions also tend to promote dilution of crankcase oil by unvaporized fuel. In intermittent service, automatic chokes may remain in operation during the entire run so that rich mixtures are fed to the engine, thereby causing excessive dilution.

The efficiency of electrical systems is always lower in cold weather. Battery output is much reduced, resulting in slower cranking. Ignition efficiency is impaired by decreased battery voltage and by fouled or incorrectly adjusted spark plugs, thus causing incomplete combustion and frequent misfiring. Such failures of the electrical system to function at high efficiency will result in unburned fuel working into the crankcase to cause excessive dilution of the lubricating oil.

3. *Dust:* Dust is always present in the atmosphere. The accumulations of dust on the body of the car and on the oily surfaces of the engine are a rough indication of this. Dust storms, detours, country roads, and road shoulders are all major sources of dust. Even in cities, the dust content of the air is appreciable,

BUT.. be sure to have the *PREFERRED MOTOR OIL!*

CUSTOMERS like lots of attention, of course . . . But they also *like* and *want* the products they come in to buy from you. No amount of service takes the place of them!

For instance, if it's oil they're after — you can be sure of pleasing the greatest number with *Pennsylvania*. 8 out of 10 motorists *prefer* Pennsylvania Motor Oil.

Yes — when Pennsylvania goes into a station things start to happen. Oil-to-gas ratios not only improve but the oil station sales go up. Proof of this fact comes from new emblem Pennsylvania dealers who report increases up to 50% in sales of gas.

You can get more information on the sales-appeal of emblem Pennsylvania Motor Oils by talking to our field representative or writing us at headquarters.

PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION

OIL CITY, PENNSYLVANIA

BETTER OILS FROM THE GROUND UP!

MEMBER OF PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION
Guaranteed 100% PURE PENNSYLVANIA OIL
PERMIT NUMBER
Made from the highest grade crude oil in the world

COPYRIGHT 1937 U.S.A. BY PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION
TRADEMARK REGISTERED U.S. PATENT OFFICE

as public-health-department records show that a dust fall of from one to four tons per square mile per day is not unusual in American cities.

Ordinarily, from 3 cu. ft. to 27 cu. ft. of air per minute is forced through engine crankcases to ventilate them. This is small compared to the amount of air which passes through the carburetor into the cylinders. For the average car under normal driving conditions, this amounts to approximately 100 cu. ft. per minute. Since crankcase ventilators do not normally have effective air-cleaning equipment, and as most carburetor air cleaners are not on the average more than 50 per cent efficient, considerable quantities of dust enter the engine under ordinary operating conditions.

Dust is a very active abrasive, and always promotes wear. In extreme cases it has been known to ruin engines completely in less than 1,200 miles of operation.

Oil filters seldom provide adequate protection against wear from dust or other contaminating materials. Only a small proportion of the oil in circulation passes through them; they clog rapidly, and are often ineffective over a considerable portion of the period during which they are in service.

4. *Oil Deterioration:* Under normal operating conditions, oil undergoes gradual chemical change in contact with air and the metals in the engine. These changes result in the development of products which may in time result in damage to bearings, cylinder walls, wrist pins, and other delicately-finished surfaces in the engine, if such contaminated oil is allowed to remain in the crankcase for too long a period.

Chemical changes leading to the development of these contaminating substances are accelerated by the presence of the contaminating substances themselves, in exactly the same way that one rotten apple in a barrel soon leads to the destruction of the remaining good fruit. Accumulation of these contaminants, either in the oil itself or as deposits in crankcases or oil filters, seriously endangers the stability of the lubricant.

Protracted use of lubricating oil too frequently results in the development of non-lubricating substances which increase engine drag, promote excessive carbon formation, varnish and lacquer deposit and may result in stuck rings, corrosion of alloy bearings, clogged oil screens, and ultimately in total failure of the lubricating system and damage to the engine.

5. *The amount of these various contaminants* in crankcase oil depends upon the distance or time a car is operated and upon operating conditions. As the quantity of these substances in crankcase oil can only be determined by laboratory analysis, which is not practical for the average car owner, his only safe method of assuring engine protection and efficiency is to drain oil at sufficiently frequent intervals to prevent dangerous contamination.

* * *

The points discussed above indicate why regular oil changes are important. The intervals at which such changes should be made will depend on the operating conditions prevailing. It is obviously impracticable to give a detailed recommendation which will cover the particular conditions under which each individual car is operated. It is, however, possible to set a practice which will provide a sufficient margin of safety for the wide range of conditions known to be encountered by the average automobile. This practice has already been stated above.

The Cost of Draining Crankcases

The oil cost of frequent crankcase changes is extremely small compared with the cost of repairing damages resulting from faulty lubrication. For example, if a car with a five-quart crankcase capacity consumes one quart of oil every 500 miles, then in 7,500 miles of operation (roughly the annual operation of the average passenger car) 43 quarts will be used if changed every 1,000 miles, 35 quarts if changed every 1,500 miles, and 31 quarts if changed every 2,000 miles. Even if oil is changed only once a year, 19 quarts will be used.

On the other hand, even the simplest repair operation made necessary by faulty lubrication will wipe out any savings made by extending the draining period, and the extensive repairs made necessary by neglect to drain as recommended will cost many times any possible saving through extending the draining period.

NPN's "1000 Mile Lubrication Campaign" Material is Available for Marketers

WINDOW SIGNS NPN is making available to oil marketing companies big, colorful display signs featuring the sales slogan, "For Safety's Sake—Lubricate Every 1000 Miles—This Summer." These signs dramatically call motorists' attention to the necessity of more frequent lubrication. Many marketers will use these signs both on the windows of the station and inside the station, in order to keep station salesmen campaign-minded every day during the summer. Signs are attractively printed in two colors and are 12¼ by 19 inches in size. Elsewhere in this issue, prices are shown for quantity purchases of this material.

REPRINTS OF ARTICLES Another aid made available to oil marketing companies by NPN will be Reprints of the editorial articles published in this issue and in forthcoming issues on the Summer Lubrication Campaign. These reprints have been prepared for the use of salesmen, service station attendants and dealers of oil marketing companies. The reprints are invaluable in helping build convincing, authoritative sales talks and arguments to use with prospects, NPN is making them available at a low price so that everyone connected with the selling of lubrication can have his own copy for individual study and daily reference.

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Knowing that equipment will stay in service under all kinds of road and weather conditions—knowing that schedules will be met—that upkeep and repairs will be held to a minimum—are happy thoughts for any fleet operator. Well, building mobile equipment that will meet these requirements is no longer a hope—a dream. It's an actuality. And the high tensile steel that makes it possible is DUCTILOY.

The reason DUCTILOY makes this possible is that it has extremely high resistance to impact and fatigue—at normal as well as at extremely low temperatures.

Builders of mobile equipment like DUCTILOY, for it can be fabricated easily, usually without any change in regular shop practice. Then, too, they know that their product will give long, safe service—make for greater sales and increased customer satisfaction.

Talk over the use of DUCTILOY with your equipment builder or write to us for a list of manufacturers who are using this really superior high tensile steel. Or, if you desire, a Great Lakes engineer will be glad to call, go over your high tensile steel requirements and show you how you can use DUCTILOY to save money and increase equipment life. Telephone, telegraph or write, today.

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Safe Handling

In the Marketing of Petroleum Products

By D. S. Russell, Pure Oil Co., Chicago

Presented at Petroleum Industries Sessions, Michigan Safety Conference, May 23-24, at Lansing.

SAFETY hints for oil marketers in the handling of petroleum products, brought out in the accompanying paper presented at the Michigan Safety conference:

At the Bulk Plant—

Loosen tank car dome cover cautiously, allowing time for vapors to vent to the air. If a lever or pry bar is needed, use one of brass, not steel.

Bond and ground all storage tanks, loading and unloading equipment and railroad tracks, using stranded copper wire.

See that recognized safety practices are followed in cleaning storage tanks.

In the Warehouse—

Keep packaged stock and drums in sacks, and provide ample aisles for safe, convenient handling.

Use hot water and tri-sodium phosphate, not gasoline, for cleaning floors.

On Delivery Equipment—

Inspect daily steering gear, brakes, windshield wipers, fog lights, head and tail lights and rear view mirrors.

See that tanks are properly grounded at all times.

At Service Stations—

To prevent over-filling of cars and spilling gasoline, don't depend entirely on the gasoline gauge.

Use kerosine or carbon tetrachloride, never gasoline, in cleaning engines or metal parts on cars.

Make the truck driver an ambassador of safety to service station operators.

In wholesale marketing gasoline is normally received from the refinery by tanker, barge, tank car or transport truck. Normal change in the temperature of the commodity between point of shipment and destination is certain to cause a change in the volume of the product, as well as the pressure inside the shipping vessel. Therefore, extreme care is necessary in preparing the shipment for unloading.

Hatches or dome covers should be loosened and removed cautiously, allowing ample time for the confined vapors to be vented to the air. Second, dissimilar metals should always be used in case a pry bar or lever is necessary. Strongly recommended are the brass bars commercially made for this particular purpose. There is some contention in the industry as to whether or not it is possible to ignite gasoline vapors by a friction spark; however, it is our opinion that until such time as laboratories have definitely proved that such is not the case, it is well to continue to use dissimilar metals as previously described.

The phenomenon of the generation of static electricity by the flow of liquids is well known. However, adequate protection to ground the vessel or container used is one of the most neglected features of the industry. It is also one of the most prevalent causes of accident. During the past 6 months we have devoted considerable time to the study of this fact. At present our findings are incomplete but the following are proven facts:

(1) A measurable amount of electricity is generated by flowing liquid.

(2) If the liquid is delivered into a receiver in such a fashion that spray is formed, the quantity of electricity is increased.

(3) Humidity, temperature and barometric pressure affect the amount of current produced.

Explosion of the gasoline vapors or the vapor catching on fire is the prime hazard in wholesale marketing; second is the hazard of toxic poisoning by inhaling the vapors by employes in the plant. We, and all other marketers of petroleum products, are constantly faced with daily evidence of familiarity breeding contempt. The casualness with which gasoline and gasoline vapors are handled is appalling to any Safety Director. The gasoline is usually handled with some care; but the vapors are usually ignored.

Gasoline vapors are about 2.5 times as heavy as air. Therefore, they seek the lower levels and, as such is the case, are not always detected. For some unaccountable reason most employes depend on their noses to warn them of dangerous gasoline fumes. If this were sound there would be no place for explosive gas indicators in the industry. The conclusion is obvious. Gasoline vapors travel exactly like water—obeying the laws of gravity. But because they cannot be seen, they are, in a measure, disregarded.

STATISTICS are usually boring to all but an accountant or an actuary. They do, however, often present a clear picture of progress or the reverse. The latest figures available from the American Petroleum Institute on accidents in marketing operations are for the calendar year of 1938.

Total hours worked	207,475,000
Number of employes	94,295
Injuries of all kinds	2,144
Deaths	15
Total Lost Days due to accidents	60,066 or 165 years

At an average wage of $2000 per year that figure represents the good round sum of $330,000, or one-third of a million, as tribute to carelessness or ignorance by the 50 companies reporting—this is lost time only. No attempt has been made to include the dollar value of the property loss. Breaking these figures down a little further, the report shows that the wholesale marketing operations had 716 injuries—retail marketing 228 injuries—and 1200 injuries were reported by companies who made no distinction between wholesale and retail operations.

The cold hand of death reached out 15 times during the year and struck down a member of the marketing division. Fire and explosion accounted for 6; electrical causes one; traffic 4; other causes, general, 4. It matters not the cause specifically. What is im-

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THERE is a sentinel on duty always—a guard that defies all trespass—when a drum is equipped with Tri-Sure Closures.

No hand can touch the contents of a Tri-Sure-sealed drum. No leakage or waste can cause the loss of a single drop. The reason is that Tri-Sure Closures give the *triple-protection* of a perfected seal, plug and flange—a leak-proof *seal* which cannot be removed unless it is deliberately destroyed; a perfectly tight *plug* which is held securely by gaskets in plug and seal; a *flange* that is always flush with the inside of the drum-head.

Tri-Sure's triple protection is the kind of protection every drum should have. Why not put this "sentinel" on guard over *your* product and *your* reputation—a sentinel that will say "all's well" with every drop you ship. Write today for information on Tri-Sure Closures.

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portant is that all 15 were the direct results of accidents and as such were preventable.

Preventive measures that should be a very definite part of all wholesale plant operations are:

(1) Bond and ground all storage tanks, loading and unloading equipment and railroad tracks. Weld or braze the bonding wire on. Do not depend on clamps or similar devices. Use copper wire—preferably No. 0 or larger, and stranded. This wire may be insulated or not, that point is not of importance.

(2) All switches, both light and power, should be vapor-proof. All light fixtures should be vapor-proof, and all motors should be explosion-proof.

(3) Ample and adequate fire extinguishers should be at strategic and convenient points. Highly recommended are CO_2, Foamite and Carbon Tetrachloride. CO_2 is especially recommended for electrical fires. Fire extinguishers should be where they are immediately accessible both from the inside and outside of buildings or rooms.

(4) All tanks, pipes, connections, valves and vents should be inspected at regular intervals for leaks.

(5) All elevated tanks should be provided with adequate stairs, hand and guard rails and cat-walks.

(6) From time to time it is necessary to enter storage tanks for cleaning and repairing. This is extremely hazardous and several precautions should be followed explicitly—

(a) Steam the tank to remove all vapors.

(b) Use a mask with a fresh air hose attached.

Great care should be used in loosening a tank car dome cover. If a pry bar is needed, it should be one of brass, not steel, to avoid friction sparks igniting the vapor

(c) A harness and life line should be used with an attendant on the outside of the tank, standing upwind from the tank opening.

(d) All lights should be vapor-proof and grounded. Do not change lamp bulbs or fuses inside the tank or any place where explosive vapors may exist.

(e) Great care should be exercised in handling tools to eliminate the possibility of fire by friction.

(f) All portable equipment, tools, lamp cords, drills, etc. should be grounded by means of a three-wire extension cord.

(7) One of the most dangerous accidents—if such a happening can be classified as an accident—is the error of unloading material into the wrong tanks. Considering the fact that as little as 1.5% of kerosine can be detected in gasoline and 1.5% of gasoline in kerosine by as simple a test as distillation, it is important to eliminate the manifolding of dissimilar products entirely. Loss in quality will be avoided in the kerosine in gasoline mixture and the hazard of fire or explosion from the gasoline in kerosine mixture will be eliminated.

All lines should be identified by being painted distinctive colors and metal tags attached to all valves. The tags should be marked or stamped plainly with the name of the product controlled. All containers, empty or full, should be plainly marked or labeled with contents. If empty, additional safety will be secured if placarded "Explosive Vapors"—"Do not expose to heat or open flames".

In the warehouse good housekeeping will eliminate many institutional hazards. All stock and drums should be stacked or arranged in an orderly manner. Provide ample aisles to allow easy and safe handling of material. The floors should be kept free from oil and grease at all times. Do not use gasoline for floor cleaning. Hot water and tri-sodium phosphate will do the job easier, quicker and much safer.

If possible, store all drums on racks. Check all bungs for leaks and do not store drums on the floor or ground. If metal racks are not available use 2 x 4's and chock the end drum. When up-ending drums, stoop or lean into the work. Bend the knees so that the strain is distributed over the legs, back, shoulders and arms. Get leverage. When over-turning a drum, push it away from you until it is balanced, then step to the side and lower it.

Provide a metal drip pan under all drums or spigots from which smaller oil containers are filled. Rubber gloves, goggles, rubber boots, safety metal hats, hard-toed shoes and similar equipment should be used where and when needed. When unpacking material place the refuse in a container and remove or bend down all nails in scrap lumber. Do not allow rubbish to accumulate. Keep all weeds and grass cut to eliminate fire hazard.

Delivery Equipment—

(1) The mechanical condition of delivery equipment should be excellent at all times. Nothing else, or anything less, is satisfactory. Daily inspection of steering gears, brakes, windshield wipers, fog lights, head and tail lights and rear view mirrors should be obligatory.

(2) Be governed by local traffic regulations. Be courteous and remember that the surest way to avoid traffic accidents is to give way to all other drivers. One might go so far as to say that if a driver considered the operators of all other vehicles to be mentally unsound or imbeciles and proceed accordingly, it would be a very definite forward step in safety on the highways.

(3) All equipment should be grounded at all times to eliminate fire or explosion hazards from static electricity.

RETAIL MARKETING—

The problem of safe handling of petroleum products in the retail marketing division has and probably will have a prominent place in the eyes and minds of Safety Directors for some time. There are several reasons for this:

(1) On the average, the employes in that division are not as experienced as those in other departments.

(2) It is the only portion of the industry which has to cope with the carelessness of the public. Whether this carelessness is due to ignorance, innocence or plain 'don't care', we are unable to state.

(3) The wide-spread operations of the retail marketing make safety procedure an extremely difficult problem to supervise and regulate.

To review a point or two which has caused these conclusions. In service station operations the operator is first and always bedevilled by the prime necessity of earning a living. Sales promotion plans take all of his spare time—follow-up systems, calls or personal solicitation, competitive conditions and the ever present payroll keep him sales minded to the exclusion of almost all other phases of his business. To prove this, ask any credit manager of a company who uses courtesy or credit cards, or, better still, take a look at the dealer's private credit spindle.

The helpers are hired, again on the average, without due regard to the type of individual needed for the job, more often on the basis of whom he knows. The dealer does not have the time to train his helpers in safety matters, and, to be more blunt, we suspect that he probably couldn't if he tried. A blissful ignorance on the subject of danger in handling petroleum products is the usual rather than the unusual condition. But I am sure you will agree that the operators are

BUSINESS GOING UP DOWN ON THE FARM

Oldest distributor tells of increasing farm trend to Cities Service products

"We distribute Cities Service products to 113 dealers," says Mr. George Schumacher, general manager of the Iowa Oil Company, oldest Cities Service distributor. "Today scientific farming uses more and more machinery, which is good business for the petroleum industry—and particularly good business *for us*. Because Cities Service products, like Koolmotor and Cities Service Motor Oils, Koolmotor Gasolene and Trojan Lubricants give the reliable long-lasting service that farmers demand. Our repeat business proves that once a Cities Service customer—always a *satisfied* customer!"

It pays to sell Cities Service Products and CITIES SERVICE HELPS YOU DO THE SELLING!

All this support is yours when you sign with Cities Service

Exclusive Features—In addition to the products mentioned above, Cities Service offers such unique service features as the Cities Service Power Prover, Ride Prover, Heat Prover, and such specialties as Cisco Solvent and Cisco Pep—all business builders and real money makers.

Radio—The Cities Service Concert, radio's oldest program, thrills millions of listeners every Friday night. Lucille Manners, Frank Black, Ross Graham and Ford Bond help you sell Cities Service Products.

Magazines—Cities Service's 1940 theme "an extra year of youth for your car" reaches *additional* millions of readers in the Saturday Evening Post and other well-known publications.

Outdoors—They read while they ride—and Cities Service billboards and posters attract customers at the ideal time—right when they're on the highway.

Direct Mail—Cities Service's "Business Builder" is a year-round direct mail campaign that has everything—looks, hooks and selling appeal.

Cash in—Think what this complete selling program can mean to your business. Why not get all the details on this money-making merchandising? Wire, write or phone to the nearest office listed below.

CITIES SERVICE OIL COMPANIES

CITIES SERVICE OIL COMPANY— Chicago, New York, Cedar Rapids, Boston, St. Paul, Grand Rapids, Syracuse, Kansas City, Ft. Worth, Tulsa, Milwaukee, Cleveland, Detroit, Harrisburg.

CITIES SERVICE OIL COMPANY— LIMITED Toronto, Canada

ARKANSAS FUEL OIL COMPANY— Shreveport, Little Rock, Jackson, Miss., Birmingham, Atlanta, Charlotte, N. C., Nashville, Richmond, Miami.

to be pitied rather than censured. It is the system that is at fault.

Petroleum products normally handled at retail through service stations are motor fuel or gasoline, naphtha, kerosine, lubricating oils and greases.

FIRST—GASOLINE:

Liquid gasoline will not burn—only its vapors will burn and then only if mixed with the proper amount of air. Further, if the air-gas ratio is richer than 6 to 1 it will not burn, and conversely, if the air-gas ratio is leaner than 22 to 1 it will not burn. So we have now, a highly volatile substance, commonly used, of tremendous potential energy which must be vaporized and mixed with air to become a fuel, and which is dispensed by mechanical equipment. The hazards attending the handling of the product again are two: (1) Fire or explosion; and (2) Poisoning. I doubt whether anyone ever heard of a fire or explosion in an underground tank in service. That would be contrary to all the laws of physics. The hazards are in dispensing the product.

At that time, the mind of the operator is full of "car service routine" —"get under the hood", "wipe the windshield", "inflate and inspect tires", "get the extras" and "May I check your oil?" Far be it from me to decry sales efforts and sales methods. However, tanks filled to overflowing, gasoline spilt on the fender from the nozzle of the hose when it is removed from the tank, either on purpose or accidentally, when the operator is trying to be a man of many activities, are real hazards. By 'many activities' I mean wiping the rear window, the tail light, the license plate, as well as inspecting the rear tires while he is letting gasoline run into the tank of the customer's car.

The customer states his wants in gallons of gasoline, gauging the amount wanted by: (1) the contents of his pocket book; (2) known immediate future needs; and (3) by the indication on his gas tank gauge. This last has some influence on the first two; however, most car gauges are notorious liars and an error of two or three gallons between actual and indicated contents is quite common. To bring that point closer home, let me ask if everyone of you have not at some time or other driven a considerable distance in your car after the gauge pin was firmly fixed at 'empty'. The car then was not running on its reputation—it was still consuming gasoline. The possibility of error on the part of the customer is apparent, I am sure, to all of you, and the station operator is the victim of the error.

A NEW gadget which is highly dangerous has recently made its appearance in the field. This is a synthetic rubber hose-nozzle. The use of this device positively prevents the static electricity generated by the flow of liquid into the gas tank from being discharged to the ground, for the simple reason that no metal is in contact with the car. When the cap is replaced on the tank, the stored current is released as a spark across the fill pipe hole and the tank cap at a point where the vapors are present in full force and with plenty of oxygen. The result is a spectacular fire.

(Editor's Note—More recent developments in the manufacture of this type of hose nozzle, referred to by the author, after his paper had been prepared, are that metallic substances are impregnated in the hose nozzle, and a wire is braided in the flexible material, which wire acts as a medium for grounding static electricity generated in the filling operation.)

Another source of danger is in selling small quantities of gasoline to buyers, usually children who have been sent on the errand, in any containers that happen to be handy. These containers run the entire gamut from the legal gasoline can to milk and Old Taylor or Wilkins Family whiskey bottles. Also, the child, if young, is quite apt to confuse gasoline or kerosine,

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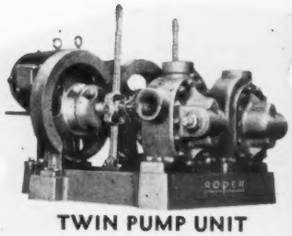
Less cost to install . . . less cost to operate! That has been the enviable record of Roper Pumps for years . . . and now with recent improvements economy is more pronounced than ever.

When you equip your bulk plant and trucks with Roper Rotary Pumps you'll be impressed with their smoothness, quietness and plus-power . . . furthermore you'll know you made a smart buy when you check cost figures.

If you haven't received our new Catalog No. 936 send for it today . . . it contains a wealth of pumping information in addition to complete descriptions of the new Roper line.



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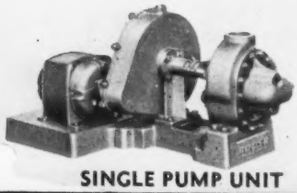

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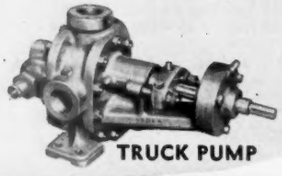


TRUCK PUMP

GEO. D. ROPER CORP., ROCKFORD, ILLINOIS.

which is anything but a healthy condition.

It is my personal opinion that definite steps should be taken to make some sort of a penalty to sell gasoline, naphtha or kerosine in a container not clearly labeled.

(2) This would hold for used as well as new containers.

(3) Gasoline and naphtha should be in red cans and kerosine in some other distinctive color vessel, say, green, and labeled.

In some states there are limits on the amount of naphtha that can be stored in a station, this is usually 5 or 10 gallons. The amount is somewhat silly, as 5 or 10 gallons of naphtha would make just as successful a fire as would 50; then, too, it adds tremendously to the cost of handling the product. Much better to establish specifications for the product in keeping with the best technical information in the industry.

The oils and greases in themselves present little, if any, danger; however, spilt oil offers an excellent chance for a fall from a skid or a slip, especially with rubber heeled or soled shoes being so common. Grease in a great many instances lives up to its Websterian definition as a verb which is "to smear". Oil and grease should be wiped up promptly after being spilt and the surface washed with hot water and tri-sodium phosphate. In this way many serious accidents resulting from falls will be avoided.

IN no instance should gasoline be used to clean engines or metal parts of cars, or for any other cleaning purpose in a service station. Instead, if a liquid cleaner is needed, use kerosine and/or carbon tetrachloride which in itself is an excellent solvent.

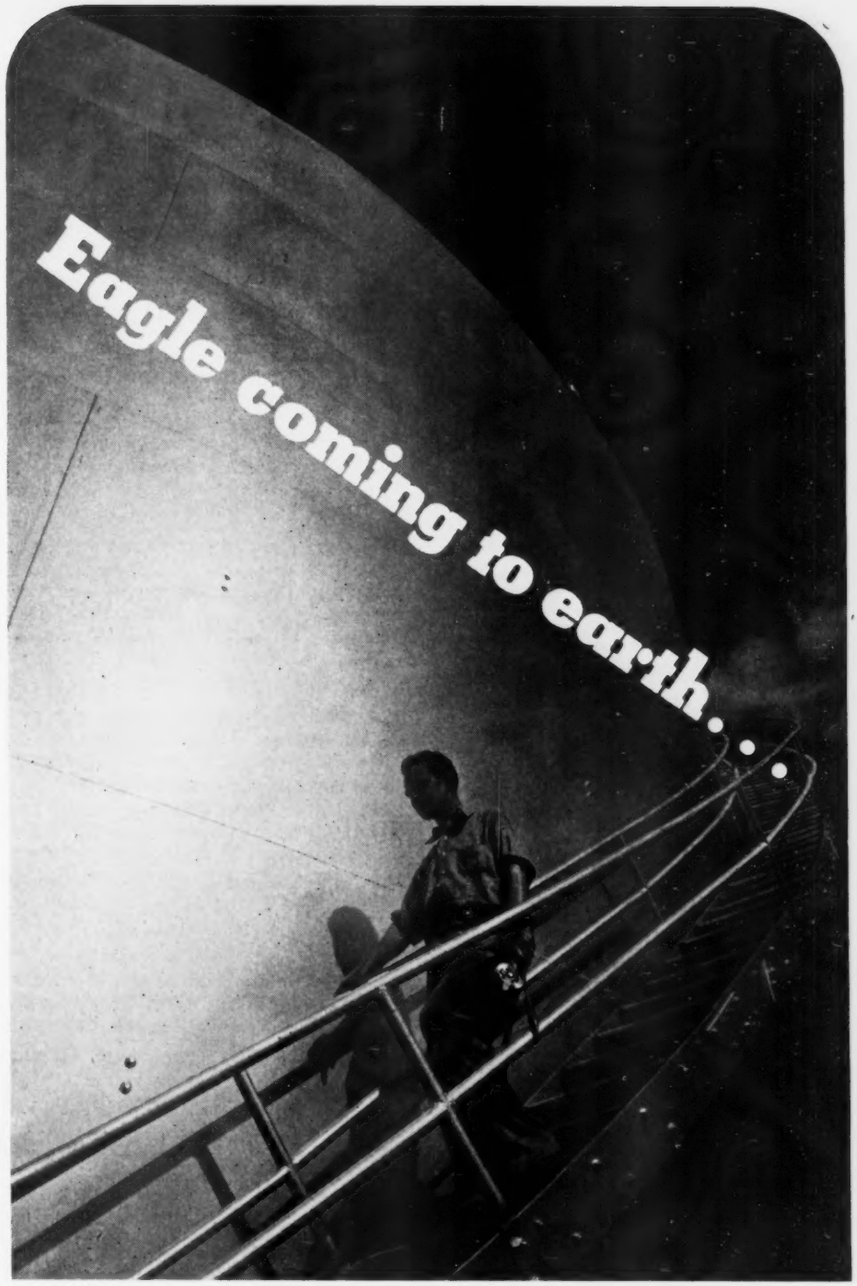
It is my personal opinion that the best way to successfully educate the station operator is through the territorial salesman and the tank truck driver. Make them ambassadors of safety. But first, and this is the sad part, they must be trained. Safety in station operation is not a problem that readily adapts itself to mass handling. The personal element is too pronounced and needs personal attention.

All that I have said could be summed up in a simple statement; "The best safety device known is a careful and conscientious man".

Therefore, train your people to be careful and the safe handling of petroleum products is automatically taken care of.

Practical methods for organizing and carrying on safety work in oil marketing companies with limited personnel, were outlined at the Michigan Safety Conference, at Lansing, May 23, by Merlin T. Ford, of the Socony-Vacuum Oil Co. at Flint, Mich.

The first step, he said, was to organize a safety committee of employes,



Photograph by Robert Yarnall Richie

Called "eagle" because of his eagle-eyes, he's just one of the trained inspectors at every General American Terminal. On guard for you everywhere—together with the finest protective equipment—so that your commodity is absolutely safe. Join the list of world-leaders who use General American facilities.

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HEAT FAG threatens *all* workers who sweat—because sweating robs them of vitally needed body salt. Morton's Salt Tablets are the simple, effective way to replace that loss and check Heat Fag's toll on production . . . *Write for folder: "Heat Fag Among Workers."*

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MORTON'S MODERN SANITARY DISPENSER Delivers tablets one at a time. Morton's Salt Tablets are made of the most highly refined salt, pressed into convenient tablet form. Dissolves in less than 50 seconds after swallowing.

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Use **DOOR-EASE** Stainless Stick Lubricant as specified by leaders in the industry for door dovetails, lock tongues, rubber door bumpers, hood lacings and other exposed surfaces. Use **DOOR-EASE** Dripless Oil, a rapid penetrant and better lubricant for hinges, locks and other hard-to-get-at places. "Runs in — Won't run out".

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'Ceiling' for Fuel Oil Prices Discussed by Purchasing Agent

CINCINNATI — "The oil industry will recognize that there is a ceiling on fuel oil prices that can't be exceeded if they are not to force many consumers to coal," declared M. W. Merrill, purchasing agent of U. S. Metals Refining Co., Carteret, N. J., and chairman of the National Committee on Fuel Oil of the National Assn. of Purchasing Agents at annual meeting of the association here.

Pointing out that rapidly changing conditions made it impossible to forecast future fuel oil price trends, Mr. Merrill earmarked the most important purchasing factors, which, in his opinion, should be given careful consideration during the coming months.

Refiners, said the head of the fuel oil committee, are contemplating readjustments of refinery runs to get a higher yield of fuel oil from the amount of crude changed. "It would be well for us to bear in mind that if this practice grows, the logical sequence in this event will be for the refiner to push for a better price for distillates and bunkers to offset the loss of revenue through the reduction of gasoline yields which normally carries a large portion of the cost of crude.

"We have reason to suspect," he added, "that in proportion as the marketing companies see their profits diminish they will become more cautious in making commitments and endeavor to protect themselves by what may appear to us as an excessively high maximum contract price." He then added that the industry would recognize that there is a ceiling which cannot be exceeded.

Points to Market Factors

The U. S. Metals executive outlined to purchasing agents effects of the war, and expected war demand on fuel oil and tanker markets. He also touched on the effect of the heavy demand for fuels during the last heating oil season, and the inventory position of the oil industry.

"Contrary to expectations of the oil industry in September of last year," Mr. Merrill pointed out, "the demand for refined products out of the Southwest coastal area of the U. S. for export movement failed to materialize. This was primarily due to the American policy of 'Cash & Carry' which restricted the sale to belligerent nations, and the delay in starting the intensive warfare.

"On the other hand, the continued period of severe winter weather in the north and northeast parts of the country, in conjunction with the unprecedented cold weather in the southern states, worked to force the

ABOVE all, said Mr. Ford, the management at all times should show its active interest in the safety program.

The Petroleum Program of the Michigan Safety Conference, which included representatives of many industries and of public and state agencies, was sponsored by a Safety Committee of the Michigan Petroleum Industries Committee. W. L. Davis, Mt. Pleasant, vice president of the Roosevelt Oil Co., is its chairman, F. R. McLean, safety manager, Socony-Vacuum Oil Co., Detroit, is secretary.

"The Safety Committee, which the oil industry has organized in Michigan on a permanent basis, will function in co-operation with the Michigan Petroleum Industries Committee", said William Palmer, Lansing, secretary of the latter. "Primarily this committee has been set up to co-ordinate safety activities generally among refiners, marketers and transporters.

"This work is a new departure in Michigan. While safety activities are for the most part the responsibility of the individual company or organization, the committee has agreed that a co-ordinated effort should be made to fully acquaint not only all persons in the petroleum industry in the state, but also government agencies with the causes, prevention and control of petroleum fires. This is to be accomplished through round table conferences and other educational methods."

the management appointing the chairman, so his responsibility to the company executives will be recognized.

Meetings of this safety committee should be held regularly, starting and stopping at the announced time, and means taken to insure full attendance. Fines for absence or tardiness were suggested as a means to this end, the funds collected to be used as the committee desired. An annual banquet by the management was also suggested as a means for helping attendance.

When the safety committee reports a condition which has been proven dangerous, the remedying of which requires an outlay of money, the management should immediately investigate and correct if possible, to show its support of the safety program.

A program for the safety committee's meetings should be arranged beforehand. A feature of meetings could be a paper or discussion on some special subject assigned to a committee member or an outsider, said Mr. Ford.

Brief minutes of the committee meetings should be posted on the Safety Bulletin Board.

price of all grades of fuel oil above 1939 consumer contract prices. It is generally conceded that the strong tanker market which developed during the fall and winter was mainly the result of the diversion of American-flag vessels to offshore runs formerly served by Scandinavian and other European-flag ships.

"As you are well aware, the refining of crude oil results in varying percentages of gasoline, distillate and residual fuel oil. Owing to the unprecedented demand for distillate fuels this past winter, plants were compelled to step up their refinery runs, thereby accumulating the largest stocks of gasoline in the history of the country. Another contributing reason for these excessive stocks was the very material loss of export gasoline sales due to the drastic curtailment for civilian use in belligerent countries. The demand for war purposes to date has failed to offset this decrease in civilian consumption.

Cites Decline in Use of Heavy Fuel

"The curtailment of steel production over the winter has resulted in a marked decline in the use of heavy oils throughout the industry, and this decline has been further accentuated by the fact that the sales to ships normally bunkering on the eastern seaboard has been drastically cut," Mr. Merrill said.

"Without question, at the present time there are more than ample stocks of all types of petroleum products in the producing regions, and with very few exceptions, this holds true also for consuming areas," the purchasing agent continued. He added, however, that "it should also be kept in mind that there are large stocks of gasoline and fuel oils in the producing regions around northern South America which were built up in anticipation of export demand, when, and if, the progress of the war cuts off supplies from the Balkan petroleum fields.

Sees Readjustment in Industry

"With the inventory position of refiners as far out of balance as we see it today and confronted as they are with shrinking export demand, we would do well to look forward to a period of readjustment within the petroleum industry itself," the speaker asserted. "Production of crude petroleum in the U. S.," he pointed out, "has maintained a steady upward march and this, together with the constantly increasing volume of foreign crude being imported into the refining areas of the country has brought about a condition whereby it is not improbable that lower crude prices will be witnessed or a drastic curtailment of production will be made in the producing states."

Bearing of Tanker Rates Shown

Turning to the price structures of fuel oils, gasoline and lubricating oils, Mr. Merrill stated that any forecast at this time "is entirely contingent upon the outcome in Europe," and he warned purchasing agents to keep their ears to the ground.

"This will be particularly true in those markets on which tanker rates have a direct bearing," the speaker added. "With the present rate from 2 to 3 times higher than the average rate for the past 10 years, it may well be that a sudden cessation of hostilities would bring a tanker market collapse and we would witness an overnight break in the bunker, distillate and gasoline price setup.

"Price reports from various parts of the country at this time indicate a general tendency to weakness," the speaker said. "This is particularly true of gasoline and, inasmuch as it is unlikely that the domestic demand will be sufficient to reduce the inventories and, barring any major demand on the part of the belligerents, we may look forward to a period of depressed prices," he added.

"However, in the case of distillates which have shown definite signs of weakness during the past week, one should be on his guard as it is hard to realize how soft prices can be maintained for long with the Gulf markets holding steady, unless something transpires to weaken the transportation costs. In this connection we must keep in mind the problems confronting the producers and refiners of crudes.

"The bunker market has also shown signs of weakness as evidenced by the recent reduction in the posted price. However, it is authoritatively reported from the seaboard region that almost no spot bunker is available at the lower posted price. It is not improbable that with the expansion of industrial activity under the re-armament program that the demand created thereby may very likely force the present spot prices over the contract maximum protection which is now being offered to the end of the year.

"Diesel oil will follow along with distillates and bunker so that we can look for firmer prices as industrial activity picks up later in the year and the demand for heating oil is again with us.

"As to lubricating oils of the grade required by aviation, they are readily available for current needs, but, as this country's proposed aviation program gets underway and, should the foreign demand be more pronounced, we may look for a scarcity in this quarter."

Studies Oil Imports

N. P. N. News Bureau

WASHINGTON—U. S. Tariff Commission has completed the underlying work of a study entitled "Petroleum and Products and Reciprocal Trade Agreements" which will be released in the near future.

Report analyzes effect of Reciprocal Trade Agreements program upon oil industry. Finishing touches are now being applied to the report at the Commission.

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Markets

Atlantic Coast

NEW YORK, June 8.—Reductions in gasoline quotations at many seaboard points featured Atlantic Coast markets the past week. Lower quotations reflected further weakening in cargo prices for gasoline at the Gulf, according to reports here.

Prices for kerosine and fuel oils generally were reported unchanged. Exception was 5c to 15c per bbl. reduction reported by one supplier in his quotations for No. 5 fuel oil at some northern seaboard points. Slackening in demand for light fuels was seen as result of hot weather.

Low quotations for gasoline at New York were down 0.25c, to 6c in tank cars and 5.75c in barges for the 72-74, 68-70, and 65-66 oct. grades.

Mid-Western

CHICAGO, June 8.—Demand for gasoline improved considerably the past week, according to reports of refiners and some tank car marketers in Chicago. Five tank car marketers reported 0.125c reductions in their gasoline quotations. Refiners' gasoline quotations and all quotations for other products were unchanged, according to reports. Group 3 gasoline quotations reported by refiners ranged from 4.75c to 5.25c for 72-74 oct., 4.375c to 4.75c for 63-66, and 4 to 4.25c for 60 oct. and below. Three marketers quoted 4.125c, and two 4.25c for 72-74 oct.; one each quoted 3.625c, 3.75c and 3.875c for 63-66; one at 3.375c and two at 3.50c for 60 oct. and below, FOB Group 3.

Call for kerosine generally was reported good. Refiners' Group 3 quotations ranged from 4 to 4.25c for 41-43, and 4.125c to 4.625c for 42-44. One marketer quoted 3.75c, two 3.875c and one 4c for 41-43; one quoted 3.875c, and two 4.125c for 42-44 kerosine, FOB Group 3.

Two tank car marketers reported the following open spot sales during the week: Nine cars 72-74 oct. leaded, 4 at 4.125c, 3 at 4.25c, and 2 at 4.375c; 2 cars Ethyl at 4.75c; 3 cars 63-66, 1 at 3.625c, and 2 at 3.875c; 1 car 60 oct. and below at 3.50c, all FOB Group 3.

A marketer also reported selling 1 car of V.M. and P. naphtha at 5.50c, FOB Group 3. Group 3 quotations reported by refiners for V.M. and P. were at 6.375c.

Gulf

NEW YORK, June 8.—Gasoline, gas oils and kerosine were offered at lower prices at the Gulf the past week, according to reports here and from the southwest. Trading generally was described as "quiet." Inquiries for 4 cargoes of gasoline, one for export and 3 for coastwise movement were reported in the market. No open spot sales were reported.

Refiners' asking prices for 400 e.p. gasoline ranged down to 4.125c for 72-74 oct., 4.375c for 68 oct., 4.125c for 65 oct., and 4c for 60 oct. Kerosine was offered 0.125c lower, at 4.125c, and asking prices for gas oils showed similar decreases.

One refiner reported withdrawing his quotations for all products, adding that he would not quote unless the inquirer had shipping tonnage available.

Pennsylvania

CLEVELAND, June 8.—Dark and bright cylinder stocks were offered 1c a gal. lower, while prices for other refined products for the most part were reported unchanged by western Pennsylvania refiners the past week.

Continued good domestic movement of lubes against contracts was reported by refiners generally. "But we need bigger export buying to take up some of the slack," one refiner said.

Quotations reported by refiners for 25 pour test bright stock ranged from 18 to 19c. A broker reported selling to a jobber at 18c. There were unconfirmed reports of open spot prices under 18c.

Steam refined, 600, was offered at 11 to 12c. An inter-refinery sale for export was reported at 9c.

Shipments of gasoline against contracts were said to be in good volume. Fuel oil was scarce while kerosine slowed down somewhat, according to reports.

N.P.N. Gasoline Index

	Dealer T.w. Cents per	Tank Car Gal.
June 10	8.92	5.41
Month ago	9.10	5.66
Year ago	9.54	5.71

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 9 wholesale markets for regular-grade gasoline.

Mid-Continent

TULSA, June 10.—Gasoline inquiries totaling 750 cars were reported in the Mid-Continent the past week as result of the proposed increase in the federal gasoline tax.

One large refiner-marketer was said to have inquired for 400 to 500 cars of regular-grade gasoline for shipment from Oklahoma, Kansas and Texas plants. Several refiners granted options. A broker was reported in market for 200 cars of regular and third-grade gasolines. Numerous other inquiries for small quantities of gasoline also were reported. Uncertainty as to effective date of the increased tax was said to have deterred placing of orders.

"Naturally, if all this business is placed in the Mid-Continent for immediate delivery, our stocks are going to be reduced materially and markets should improve," one refiner said. Others pointed out that inquiries covered long-time requirements of buyers and that normal buying would not be resumed until these stocks are partially depleted.

Meanwhile, no changes in gasoline quotations and few open spot sales were reported.

Several export inquiries for lubes received the past few weeks have resulted in orders, one refiner reported. Details were not disclosed.

"This buying lifts the load of stocks we've been carrying," one seller said.

California

LOS ANGELES, June 8.—Both wholesale and retail gasoline prices were lower the past week on west coast.

Rack prices of third grade gasoline at independent plants in the Los Angeles Basin ranged from 5 to 5.75c per gal. with increasing quantities sold at the lower figure, according to reports.

Small quantities of high vapor pressure natural gasoline were said to have been offered 0.5c lower at 5.5c a gal.

Wilmington top-sand crude with high sulphur and low gasoline content, was reported sold at 35c per bbl., or 30c per bbl. under posted prices.

Fuel oil was reported in good demand, with an advance of about 5c per bbl., bringing heavy fuel oil to 50-55c per bbl. and light grade oil to 55-60c per bbl.

Export marketers were quiet and no changes in quotations were reported. Sale of a cargo of 40 gravity kerosine was said to have been made for shipment to a Pacific Coast port at about $1.30 per bbl. and a spot sale of 30-34 diesel was reported at about $1.35 per bbl.

REFINERY and SEABOARD PRICES

In bulk lots by Motor Transport, Tank Car, Barge or Tanker as shown

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

HOW PRICES ARE REPORTED—

Refinery and Seaboard prices in National Petroleum News are gathered by PLATT'S OILGRAM and are as published in the Monday issue of the OILGRAM.

PLATT'S OILGRAM is a reporting service issued in three identical editions daily from News Bureaus at New York, Cleveland, and Tulsa, Okla. PLATT'S OILGRAM gathers and publishes what its publisher and representatives believe to be accurate news of sales, prices and current happenings affecting the oil industry and that will be of interest to its subscribers. As this information is usually private, OILGRAM reports it according to what it is able to obtain from sources deemed reliable.

All information is supplied without guarantee as to its completeness, accuracy, time of transmission or promptness of delivery.

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Publisher reserves the right to change the extent, nature and form of showing this information at any time.

Prices shown in the tables are quotations (meaning sellers' general offers or posted prices), or actual sales prices, reported to OILGRAM by refiners for "open spot" transactions, except as otherwise specified.

Prices arrived at by discounts off a specified price or "market date of shipment," prices named in contracts or prices arrived at in accordance with any arrangement made prior to date of sale, are not for "open spot" transactions and therefore are not considered in making the price tables. Prices made to brokers and prices in "inter-refinery" transactions are also not considered except as may be noted.

All prices are for "immediate" shipment except in Gulf Coast bulk transactions where shipment is generally to be made in ninety days. Prices are FOB refineries, pipelines, or tanker terminals in districts designated.

Prices shown are for quantities in bulk such as tank car lots, motor transport lots or barge lots; and in cents per gallon; heavy fuel oils are in dollars per barrel of 42 U.S. gallons; wax and petrolatums are in cents per pound. Prices applying to barges or cargoes only are so designated.

Prices do not include taxes or inspection fees. Prices are published at the close of the business day.

Mid-Western prices in the tables were gathered from refiners with offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Other refinery prices are given by and for the particular refining district where the material is made and from which it is shipped.

When prices obtained by OILGRAM do not conform to these conditions the exception and the new conditions are noted in the news lead or in conjunction with the price table by footnote or otherwise, for the particular refinery or sales district involved.

Crude oil and products covered by OILGRAM'S news and price service, except where noted, have been represented to the publisher as fully up to the customary trade specifications indicated and according to the generally accepted methods of test; and all crude oil and all products thereof as having been lawfully produced and transported.

Any apparent error should be reported to the nearest OILGRAM or National Petroleum News office at once as no correction will be made after the second issue of the OILGRAM or National Petroleum News following its publication.

Summary of Daily Gasoline Prices (June 4 to June 10)

U. S. Motor, (ASTM octane)	Latest Prices Mon. June 10	June 4	June 5	June 6	June 7
72-74 octane:					
Oklahoma	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
Mid-Western (Group 3 basis)	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.00 (2)	5.00 (2)	5.00 (2)	5.00 (2)	5.00 (2)
East Texas	5.00 (1)	5.00 (1)	5.00 (1)	5.00 (1)	5.00 (1)
63-66 octane:					
Oklahoma	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75
Mid-Western (Group 3 basis)	4.375 – 4.75	4.375 – 4.75	4.375 – 4.75	4.375 – 4.75	4.375 – 4.75
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.625 (2)	4.625 (2)	4.625 (2)	4.625 (2)	4.625 (2)
60 octane & below:					
Oklahoma	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25
Mid-Western (Group 3 basis)	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.00	4.00	4.00	4.00	4.00
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.00 (2)	4.00 (2)	4.00 (2)	4.00 (2)	4.00 (2)
Motor Gasoline, 72-74 octane (ASTM):					
New York harbor	6.00 – 6.70	6.25 – 6.70	6.25 – 6.70	6.25 – 6.70	6.00 – 6.70
Philadelphia district	6.25 – 7.00	6.25 – 7.00	6.25 – 7.00	6.25 – 7.00	6.25 – 7.00
Baltimore district	6.25 – 7.75	6.25 – 7.75	6.25 – 7.75	6.25 – 7.75	6.25 – 7.75
Motor Gasoline:					
74-76 Octane: (L-3)					
Bradford-Warren (Western Penna.)	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Other Districts (Western Penna.)	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
72-73 Octane: (L-3)					
Bradford-Warren (Western Penna.)	5.75 (2)	5.75 (2)	5.75 (2)	5.75 (2)	5.75 (2)
Other Districts (Western Penna.)	5.50 – 5.625	5.50 – 5.75	5.50	5.50	5.50

REFINERY PRICES

Gasoline—U. S. Motor (ASTM Octane) except where otherwise specified

Prices Effective	June 10	June 3
OKLAHOMA		
72-74 oct.	4.75 – 5.25	4.75 – 5.25
63-66 oct.	4.25 – 4.75	4.25 – 4.75
60 oct. & below	4.00 – 4.25	4.00 – 4.25
60-62 400 e.p.	4.00 (2)	4.00 (2)
MID-WESTERN		
72-74 oct.	4.75 – 5.25	4.75 – 5.25
63-66 oct.	4.375 – 4.75	4.375 – 4.75
60 oct. & below	4.00 – 4.25	4.00 – 4.25
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
72-74 oct.	4.75 – 4.875	4.75 – 4.875
63-66 oct.	4.50 – 4.625	4.50 – 4.625
60 oct. & below	4.00	4.00
60-62, 400 e.p.	4.00 (2)	4.00 (2)
W. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
72-74 oct.	5.00 (2)	5.00 (2)
63-66 oct.	4.625 (2)	4.625 (2)
60 oct. & below	4.00 (2)	4.00 (2)
CENT. W. TEX. (Prices to truck transports)		
72-74 oct. (L-3)	5.00 (1)	5.00 (1)
67-69 oct. (L-3)	4.25 (1)	4.25 (1)
62 oct. & below (L-3)	4.00 (1)	4.00 (1)
E. TEX.		
72-74 oct.	5.00 (1)	5.00 (1)
60-62, 400 e.p.	4.25 (1)	4.25 (1)
KANSAS (For Kansas destinations only)		
72-74 oct.	5.00 – 5.125	5.00 – 5.125
63-66 oct.	4.625 – 4.875	4.625 – 4.875
60 oct. & below	4.125 – 4.375	4.125 – 4.375
N. LA. (For shipment to La. & Ark.)		
72-74 oct.	5.125–5.375 (1)	5.125–5.375 (k)
63-66 oct.	4.625–4.875 (1)	4.625–4.875 (1)
60 oct. & below	4.25 –4.50 (1)	4.25 –4.50 (1)

Prices Effective	June 10	June 3
ARK. (FOB Ark. plant of one refiner, for shipment to Ark. & La.)		
72-74 oct.	4.875	4.875
70-72 oct.	4.625	4.625
60 oct. & below	4.25	4.25
WESTERN PENNA. (Motor gasoline.)		
Bradford-Warren:		
74-76 oct. (L-3)	6.00 – 6.25	6.00 – 6.25
72-73 oct. (L-3)	5.75 (2)	5.75 (2)
Naphtha		
Untreated naphtha		
Stoddard Solvent		
Other districts:		
74-76 oct. (L-3)	5.75 – 6.00	5.75 – 6.00
72-73 oct. (L-3)	5.50 – 5.625	5.50 – 5.75
Naphtha		
Untreated naphtha	5.25 – 5.50	5.25
Stoddard Solvent	5.75 – 6.00	5.75
CENTRAL MICHIGAN (f)		
U.S. Motor: (Oct. L-3)		
72-74 oct.	6.50 – 7.25	6.50 – 7.25
67-69 oct.	5.50 – 6.25	5.50 – 6.25
Str.-Run Gasoline	(g) 4.25 – 4.75	(g) 4.25 – 4.75
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
72-74 oct.	7.25	7.25
CALIFORNIA U.S. Motor:		
58-61 grav., 375-400 e.p., 65 oct. & above	6.50 – 8.50	7.00 – 8.50
54-58 grav., for outside state shipment	6.00 – 7.50	6.00 – 7.50
54-58 grav., for instate shipment	5.00 – 7.50	5.50 – 7.50

Kerosine, Gas & Fuel Oils

Prices Effective	June 10	June 3
OKLAHOMA		
41-43 grav. w.w.	4.00 – 4.25	4.00 – 4.25
42-44 grav., w.w.	4.125 – 4.625	4.125 – 4.625
Range Oil	3.625 – 3.875	3.625 – 3.875
No. 1 P.W.	3.625 – 3.75	3.625 – 3.75
No. 1 straw	3.375–3.625 (2)	3.375–3.625 (2)
No. 2 straw	3.25 – 3.625	3.25 – 3.625
No. 2 dark	3.375 (1)	3.375 (1)
U.G.I. gas oil	3.25 (2)	3.25 (2)
No. 3 fuel	3.25 – 3.375	3.25 – 3.375
No. 6 fuel	$0.50–$0.55 (2)	$0.50–$0.55 (2)
14-16 fuel	$0.85 (1)	$0.85 (1)
MID-WESTERN		
41-43 grav. w.w.	4.00 – 4.25	4.00 – 4.25
42-44 grav. w.w.	4.125 – 4.625	4.125 – 4.625
Range oil	3.75 – 3.875 (2)	3.75 – 3.875 (2)
No. 1 p.w.	3.625 – 3.75	3.625 – 3.75
No. 1 straw	3.50 – 3.625	3.50 – 3.625
No. 2 straw	3.375 – 3.50	3.375 – 3.50
No. 3	3.125 – 3.375	3.125 – 3.375
No. 5	$0.75 (1)	$0.75 (1)
No. 6	$0.45–$0.55 (2)	$0.45–$0.55 (2)
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
41-43 grav. w.w.	4.00 (2)	4.00 (2)
No. 1 P.W.	3.875 (2)	3.875 (2)
E. TEX.		
41-43 grav. w.w.	3.50 –3.75 (1)	3.50 –3.75 (1)
KANSAS (For Kansas destinations only)		
41-43 gravity w.w.	4.1875-4.25 (2)	4.1875-4.25 (2)
42-44 gravity w.w.	4.375-4.50 (2)	4.375-4.50 (2)
No. 1 p.w.	3.875 (2)	3.875 (2)
No. 6 fuel	$0.60 (2)	$0.60 (2)
N. LA. (For shipment to La. and Ark.)		
41-43 grav. w.w.	3.875–4.00 (1)	3.875–4.00 (1)
10-14 gravity	$0.65–$0.70 (1)	$0.65–$0.70 (1)

(f) Prices FOB Central Michigan refinery group basis for shipment within Michigan; shipments may originate at plants outside Central group. (g) Excluding Detroit shipment. (h) For shipment to Ark. points only. (i) Quotations. (j) Sale. (k) Sales.

REFINERY PRICES (Continued)

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

Kerosine, Gas & Fuel Oil

(Continued)

Prices Effective	June 10	June 3
ARK. (F.o.b. Ark. plant of one refiner for shipment to Ark. and La.)		
41-43 grav. w.w.	4.375	4.375
No. 1	3.875	3.875
No. 2	3.375	3.375
28-32 zero fuel	3.25	3.25
Tractor Fuel	(h)4.25	(h)4.25
WESTERN PENNA.		
Bradford-Warren:		
45 grav. w.w.	5.125–5.25	5.125–5.25
46 grav. w.w.	5.375 (1)	5.375 (1)
36-40 gravity	4.875–5.00 (2)	4.875 (1)
Other districts:		
45 grav. w.w.	5.00	5.00
46 grav. w.w.	5.125	5.125
47 grav. w.w.	5.125–5.25	5.125–5.25
36-40 gravity	(1) 3.875–4.50	(1) 3.875–4.50
CENTRAL MICHIGAN (f)		
47-49 gravity w.w.	4.50–5.00	4.50–5.00
P.W. Distillate	4.25–4.50	4.25–4.50
No. 3 gas oil, Str.	4.00–4.25	4.00–4.25
U.G.I. gas oil	3.00–3.75	3.00–3.75
Fuel Oils (Vis. at 100):		
500-700 Vis	2.25–3.00 (2)	2.25–3.00 (2)
300-500 Vis	2.25–3.25 (2)	2.25–3.25 (2)
100-300 Vis	3.25–3.50 (1)	3.25–3.50 (1)
CALIFORNIA		
40-43 grav. w.w.	4.50–6.00	4.50–6.00
San Joaquin Valley:		
Heavy fuel	$0.55–$0.75	$0.55–$0.75
Light fuel	$0.75–$0.85	$0.75–$0.85
Diesel fuel	2.75–4.00	2.75–4.00
Stove dist.	3.00–5.00	3.00–5.00
Los Angeles:		
Heavy fuel	$0.50–$0.70	$0.45–$0.70
Light fuel	$0.55–$0.80	$0.55–$0.80
Diesel fuel	2.50–4.00	2.50–4.00
Stove dist.	2.50–5.00	2.50–5.00
San Francisco:		
Heavy fuel	$0.80	$0.80
Light fuel	$0.90	$0.90
Diesel fuel	4.50	4.50
Stove dist.	5.50	4.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Lubricating Oils

WESTERN PENNA.

Viscous Neutrals — No. 3 col. Vis. at 70° F.

200 Vis. (180 at 100°) 420-425 fl.

0 p.t.	25.50 (1)	25.50 (1)
10 p.t.	24.50 (1)	24.50 (1)
15 p.t.	23.50 (1)	23.50 (1)
25 p.t.	22.00	22.00

150 Vis. (143 at 100) 400-405 fl.

0 p.t.	23.50 (1)	23.50 (1)
10 p.t.	22.50 (1)	22.50 (1)
15 p.t.	21.50 (1)	21.50 (1)
25 p.t.	20.00	20.00

Cylinder Stocks

Brt. stk., 145-155 vis. at 210°, 540-550 fl., No. 8 col.

10 p.t.	20.50 (1)	21.50 (1)
15 p.t.	19.50 (1)	20.50 (1)
25 p.t.	18.00–19.00	19.00–20.00
600 S.R. filterable	11.00–12.00	12.00
650 S.R.	13.00–14.00	14.00
600 fl.	14.00–15.00	15.00
630 fl.	16.00–17.00	17.00

MID-CONTINENT (F.o.b. Tulsa)

Neutral Oils (Vis. at 100° F. 0 to 10 P.P.)

Pale Oils:

Vis.	Color		
60-85—No. 2		6.00–6.25	6.00–6.25
86-110—No. 2		6.00–6.75	6.00–6.75
150—No. 3		9.50–11.25	9.50–11.75
180—No. 3		10.50–11.50	10.50–12.00
200—No. 3		11.00–13.50	11.00–13.50
250—No. 3		12.00–13.00	12.00–13.50
280—No. 3		12.50–14.75	12.50–15.25
300—No. 3		13.00–15.25	13.00–15.75

Lubricating Oils (Cont'd)

Prices Effective	June 10	June 3
Red Oils:		
180—No. 5	11.50 (1)	11.50 (1)
200—No. 5	11.50–13.00	11.50–13.00
280—No. 5	14.75 (1)	14.75 (1)
300—No. 5	14.00 (1)	14.00 (1)

Note: Viscous Neutrals, 15-25 p.p. generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils.

Bright Stocks:

200 Vis. at D. 210°	21.00 (1)	21.00 (1)
150-160 Vis. at 210° D:		
0 to 10 p.p.	17.00–19.00	17.00–21.00
10 to 25 p.p.	16.50–18.50	16.50–20.50
25 to 40 p.p.	18.00–18.50 (2)	18.50–20.00 (2)
150-160 vis. at 210° E.	15.50–18.00	16.50–20.00
120 Vis. at 210° D:		
0 to 10 p.p.	16.00–18.00	16.00–19.75
25 to 40 p.p.	17.00 (1)	18.75 (1)
600 S.R. Dark Green	7.00 (1)	7.00 (1)
600 S.R. Olive Green	8.00–9.00	8.00–9.00
631 S.R.	14.00 (1)	14.00 (1)
Black Oil	4.00–5.50 (2)	4.00–5.50 (2)

SOUTH TEXAS Neutral Oils

Vis.	Color		
Pale Oils: (*Vis. at 100°F*)			
100 No. 1½-2½		5.75–6.00	5.75–6.00
200 No. 2-3		7.50	7.50
300 No. 2-3		8.00	8.00
500 No. 2½-3½		9.00	9.00
750 No. 3-4		9.50	9.50
1200 No. 3-4		9.875	9.875
2000 No. 4		10.00	10.00
Red Oils:			
200 No. 5-6		7.50	7.50
300 No. 5-6		8.00	8.00
500 No. 5-6		9.00	9.00
750 No. 5-6		9.50	9.50
1200 No. 5-6		9.875	9.875
2000 No. 5-6		10.00	10.00

CHICAGO (From Mid-Continent p.l. crude)

Neutra Oils (Vis. at 100° F. 0 to 10 p.p.)

Pale Oils

Vis.	Color		
60-85—No. 2		7.75	7.75
86-110—No. 2		8.00	8.00
150—No. 3		11.25	11.25
180—No. 3		12.50	12.50
200—No. 3		13.00	13.00
250—No. 3		14.00	14.00
Red Oils:			
180—No. 5		12.00	12.00
200—No. 5		12.50	12.50
250—No. 5		13.00	13.00
280—No. 5		13.50	13.50
300—No. 5		14.00	14.00

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower.

Unfiltered Steam Refined: (Viscosity at 210°)

140	9.00	9.00
160	10.00	10.00
200	11.00	11.00

Bright stocks, 160 vis. at 210, No. 8 color:

0 to 10 p.p.	18.00	18.00
15 to 25 p.p.	17.00	17.00
30 to 40 p.p.	16.25	16.25
E filtered Cyl. Stock	13.00	13.00

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

Natural Gasoline

(Group 3 & Breckenridge prices are to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

FOB GROUP 3		
Grade 26-70	(k)1.50	(k)1.50
FOB BRECKENRIDGE		
Grade 26-70	(i)1.25	(j) 1.25
CALIFORNIA (FOB plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	5.50–6.25	5.75–6.25

Naphtha and Solvent

Prices Effective	June 10	June 3
(FOB Group 3)		
Stoddard solvent	5.875	5.875
Cleaners' naphtha	6.375	6.375
V. M. & P. naphtha	6.375	6.375
Mineral spirits	5.375	5.375
Rubber solvent	6.375	6.375
Lacquer diluent	6.625–7.375	6.625–7.375
Benzol Diluent	7.875–8.375	7.875–8.375

Wax

White Crude Scale:

WESTERN PENNA. (Bbls., C.L., N. Y.)		
122-124 A.m.p.	4.375–4.50	4.375–4.75
124-126 A.m.p.	4.375–4.50	4.375–4.875
OKLAHOMA (Bbls. or burlap bags, C.L.)		
124-126 A.m.p.	4.50–4.75 (2)	4.50–4.75 (2)

CHICAGO (FOB Chicago district refinery of one refiner, in bags or slabs loose, carloads. Melting points are EMP (ASTM) methods; add 3° F. to convert into AMP.)

Fully refined:

122-124 (bags only)	6.10	6.10
125-127	6.10	6.10
127-129	6.35	6.35
130-132	6.65	6.65
132-134	6.90	6.90
135-137	7.65	7.65

Petrolatums

WESTERN PENNA. (Bbls., carloads; tank cars, 0.5c per lb. less.)		
Snow White	6.125–6.875	6.125–6.875
Lily White	5.125–5.875	5.125–5.875
Cream White	4.125–4.875	4.125–4.875
Light Amber	3.00–3.625	3.00–3.625
Amber	2.875–3.375	2.875–3.375
Red	2.625–3.125	2.625–3.125

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline-Kerosine Oil		Distillate-Gas Oil-Fuel Oil	
	Cents per Cwt.	Cents per gal. 6.6 lbs.	Cents per Cwt.	Cents per gal. 7.4 lbs.
Chicago, Ill.	40	2.640	32	2.368
Decatur, Ill.	39	2.574	31	2.294
Joliet, Ill.	40	2.640	32	2.368
Peoria, Ill.	39	2.574	31	2.294
Quincy, Ill.	36	2.376	29	2.146
Indianapolis, Ind.	48	3.168	39	2.886
Evansville, Ind.	46	3.036	37	2.738
South Bend, Ind.	49	3.231	**42	**3.108
Detroit, Mich.	64	4.224	51	3.774
Gd. Rapids, Mich.	61	4.026	50	3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	51	3.366	41	3.034
Milwaukee, Wis.	43	2.838	34.5	2.553
LaCrosse, Wis.	46	3.036	37	2.738
Min'ap'ls-St. Paul	46	3.036	37	2.738
Duluth, Minn.	52	3.432	41.5	3.071
Mankato, Minn.	46	3.036	37	2.738
Des Moines, Ia.	36	2.376	29	2.146
Davenport, Ia.	39	2.574	31	2.294
Mason City, Ia.	42	2.772	33.5	2.479
St. Louis, Mo.	33	2.178	26.5	1.961
Kansas City, Mo.	28	1.848	22.5	1.665
St. Joseph, Mo.	28	1.848	22.5	1.665
Fargo, N. D.	63	4.158	50.5	3.737
Minot, N. D.	83	5.478	66.5	4.921
Huron, S. D.	53	3.498	42.5	3.145
Wichita				
From Ponca City	7.5	*0.495	7.5	†0.555
From Tulsa	12.5	*0.825	12.5	†0.925
From Cushing	11	*0.726	11	†0.814

*This rate also includes distillate rate at 6.6 lbs. per gal.

**This rate applies only to residual fuel and gas oil. Combination rate of 32c per cwt. at 7.4, Group 3 to Chicago, plus 9c per cwt. at 6.6, Chicago to South Bend, total of 2.962c per gal., applies to petroleum fuel oil distillate not suitable for illuminating purposes.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

(f) Prices FOB Central Michigan refinery group basis for shipment within Michigan; shipments may originate at plants outside Central group. (g) Excluding Detroit shipment. (h) For shipment to Ark. points only. (i) Quotations. (j) Sale. (k) Sales. (l) Pittsburgh district prices excluded.

SEABOARD PRICES EXPORT AND COASTWISE

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

Atlantic Coast

(Prices are of refiners, FOB their refineries & their tanker terminals, & of tanker terminal operators, FOB their terminals)

Prices Effective June 10

MOTOR GASOLINE (ASTM Octane)

District:	72-74 Oct.	68-70 Oct.	65-66 Oct.	60-64 Oct.	KEROSINE and/or NO. 1 FUEL
N. Y. Harb.	6.00 – 6.70	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	5.40 – 6.00
N. Y. Harb., barges	5.75 – 6.50	5.75 – 6.25	5.75 – 6.25	6.00 – 6.25	5.30 – 5.90
Albany	6.60 – 7.10	.....	.....	.....	5.50
Philadelphia	6.25 – 7.00	6.25 – 6.75	6.25 –6.50 (2)	6.00 – 6.75	5.50 – 6.00
Baltimore	6.25 – 7.75	6.25 – 7.00	6.25 (2)	6.25 – 6.50	5.50 – 6.00
Norfolk	6.75 – 7.75	6.50 – 7.00	6.75 (1)	6.25–6.75 (2)	5.50 – 5.75
Wilm'ton	6.75 – 7.85	6.25 – 7.00	6.75 (1)	6.25 – 6.75	5.50 – 5.75
Char'ston	6.75 – 7.55	7.00 (2)	6.75 (1)	6.25 – 6.75	5.50 – 5.75
Savannah	6.75 – 7.00	6.25 – 7.00	.....	6.25 – 6.50	5.50 – 5.75
Jacksonville	6.50 – 7.00	6.25 – 7.00	.....	5.75 – 6.50	5.50 – 5.875
Miami	6.50–7.00 (2)	6.50 (1)	.....	5.75 – 6.50	5.50–5.875 (2)
Tampa	6.50 – 7.00	6.25–6.50 (2)	.....	6.25 – 6.50	5.50 – 5.875
Pensacola	6.75–7.00 (1)	.....	.....	6.25–6.50 (1)	5.50–5.625 (1)
Mobile	6.50 – 7.00	6.00 (1)	.....	5.75 – 6.50	5.375–5.625 (2)
Portland	6.60 – 7.10	6.50 (1)	.....	.....	5.60
Boston	6.25 – 7.00	6.75 (1)	6.75 – 7.00	6.00 – 6.25	5.50 – 6.10
Providence	6.25 – 7.00	.....	6.75 –7.00 (2)	6.00 – 6.25	5.50 – 6.10

FUEL OILS

	Nos. 2-3	No. 4	No. 5	No. 6
N. Y. Harb.	4.70 – 5.30	4.75 (1)	$1.55 –$1.70	$1.35
N. Y. Harb., barges	4.60 – 5.20	4.65 (1)	.....	.....
Albany	4.80 (2)	.....	$1.95 (1)	$1.55 (1)
Philadelphia	4.75 – 5.10	4.75 (1)	$1.46 –$1.68	$1.25 –$1.50
Baltimore	4.75 – 5.50	4.50 (1)	$1.47 (1)	$1.25 –$1.35
Norfolk	4.75 –5.50 (2)	.....	.....	$1.35 (2)
Wilmington	4.75 – 5.50	.....	.....	.....
Charleston	4.75 –5.50 (2)	.....	.....	$1.30 (2)
Savannah	.....	.....	.....	$1.30 (1)
Jacksonville	5.00 (1)	.....	.....	$1.30 (2)
Tampa	5.00 (1)	.....	.....	$1.25 (2)
Portland	4.90	.....	$1.95 (1)	$1.45 –$1.55
Boston	4.80 – 5.40	.....	$1.65–$1.80 (2)	$1.35
Providence	4.80 – 5.40	.....	$1.65–$1.80 (2)	$1.35

	Bunker C Fuel Ships' bunkers (g)	Diesel Oil Ships' bunkers (g)	Diesel Oil Shore Plants	Gas House 28-34	Gas Oil Gravity
N. Y. harbor	$1.35	$1.95 –$2.20	4.70 – 4.90	4.80	
Albany	$1.55 (1)	.....	4.80	.....	
Philadelphia	$1.25 –$1.50	$1.95 –$2.30	.....	.....	
Baltimore	$1.35	$1.95	4.75	4.75	
Norfolk	$1.35	$1.95 –$2.20	4.75	4.75	
Charleston	$1.30	$1.90 –$2.20	4.75	4.75	
Savannah	$1.30 (1)	$1.90 –$1.95	.....	.....	
Jacksonville	$1.30	$1.90 –$2.10	5.00	.....	
Tampa	$1.25	$1.90 –$2.10	5.00	.....	
Portland	$1.45 –$1.55	$2.05	4.90	5.00	
Boston	$1.35	$1.95	4.75 – 4.80	4.85 – 4.90	
Providence	$1.35	$1.95	4.80	4.90	

New York Export Lubes

(Penna. Products in bbls. FAS New York)

Prices Effective	June 10	June 3
Bright stock:		
Light, 25 p.t.	25.00–28.00 (2)	29.00(2)
Neutral oil:		
200 3 color, 25 p.t.	28.00 (1)	31.00 (1)
150 3 color, 25 p.t.	26.00–29.00 (2)	29.00 (2)
600 s.r., unfilt.	18.50–19.50 (2)	19.00–20.50 (2)
650 s.r., unfilt.	19.50–21.50 (2)	20.00–22.50 (2)
600 fl. s.r.	20.00–22.50 (2)	21.00–23.50 (2)
630 fl., s.r.	24.50–25.50 (2)	26.00–26.50 (2)

Wax

(A.S.T.M. Tests. Melting points, however, are A.M.P., 3° higher than E.M.P. Export prices, FAS. c.l. Domestic prices, †FOB. refr'ies., in bags, c.l., with 0.2c discount allowed for shipment in bulk, except where noted. Scale solid; fully refined slabs in bags)

Prices Effective June 10

	New Orleans Export	N. Y. Domestic	N. Y. Export
Crude Scale:			
124-6 Yellow	4.375(2)	.....	4.375(1)
122-4 White	.....	4.375- 4.50	4.375-4.50
124-6 White	4.375–4.50(2)	4.375– 4.50	4.375-4.50
Fully Refined:			
123-5	.....	6.25 (1)	6.625 (1)
125-7	6.75 (1)	6.30 (1)	6.75 (2)
128-30	7.00 (1)	6.10-6.40(2&i)	7.00 (2)
130-2	7.25 (1)	6.60 (1&i)	7.25 (2)
133-5	7.75 (1)	6.65-6.85(2&i)	7.75 (2)
135-7	8.25 (1)	.....	8.25 (2)
108-11 White Match	.....	.....	4.875 (l&j)

Naphtha

Prices Effective June 10	V.M.&P. Naphtha	Mineral Spirits
Baltimore	9.50	8.0–8.5
New York Harbor	9.0–9.5	8.5–9.0
Philadelphia district	10	8.25–9
Boston	9.5	9.25 –9.50
Providence	9.5	9.5
†Ohio points, delivered	8.75	*8.25

*This is on rubber solvent.

†Ohio prices are those of S. O. Ohio. Its prices for D.C. naphtha, special Varnolene, Varnolene and Sohio Solvent are same as for V.M.&P.

Pacific Export

(Quotations at seaboard, Los Angeles, cargo lots, except where otherwise noted.)

Prices Effective	June 10	June 3
375 e.p. blend, 70 oct.	5.25 – 5.875	5.25 – 5.875
390 e.p. blend, 68 oct.	5.125–5.75	5.125– 5.75
390 e.p. blend, 66 oct.	5.125–5.625	5.125– 5.625
400 e.p. blend, 65 oct. mm.	5.00 – 5.15	5.00 – 5.50
U. S. Motor, under 65 octane	4.875– 5.375	4.875– 5.375
38-40 grav. w.w. kero., 150 fire point	4.25 – 5.00	4.25 – 5.00
41-43 grav., w.w. kero.	4.50 – 5.00	4.50 – 5.00
44 grav., w.w. kero	5.00 – 5.50	5.00 – 5.50
Diesel fuel, 24 & above	$1.20 –$1.30	$1.15 –$1.30
Diesel fuel, under 24	$1.10 –$1.25	$1.05 –$1.25
30-34 grav. diesel (gas oil) Pac. Spec. 200	$1.25 –$1.35	$1.20 –$1.30
Grade C fuel, Pac. Spec. 400	$0.70 –$0.75	$0.65 –$0.75
In Ships' Bunkers, or deep tank lots:		
Diesel fuel, Pac. Spec. 200	$1.35 –$1.45	$1.35 –$1.45
Grade C fuel, Pac. Spec. 400	$0.75 –$0.90	$0.75 –$0.90

Pacific Export (Cont'd)

Prices Effective	June 10	June 3
Cased Goods: (Per case)		
U. S. M.	$1.45 –$1.55	$1.45 –$1.55
375-400 e.p. blend, 65 oct. & above	$1.60 –$1.70	$1.60 –$1.70
400 e.p. blend, under 65 oct.	$1.50 –$1.60	$1.50 –$1.60
40-43 grav. w.w. kero., 150 fire point	$1.40 –$1.50	$1.40 –$1.50
Kero., p.w.	$1.30 –$1.45	$1.30 –$1.45

Tanker Rates

(Approximate rates. Cents per bbl.)

Gulf-N. Atlantic: (not E. of N.Y.)	Last Paid	Owners Ask
Hvy. Crude & fuel, (10 to 19.9 gravity)	57	57-59
Light Crude, (30 Grav. or Lighter)	50	50-52
Gasoline	54	54
Kerosine	57	57
No. 2 Fuel	60	60

Gulf Coast

(Prices for sales made or firm offers reliably reported for sales pending in cargoes FOB ship at Gulf for domestic and export for minimum of 20,000 bbls. Prices are by refiners only to other refiners, export agents, or to large tanker terminal operators at the customary trade specifications noted.)

MOTOR GASOLINE (ASTM Octane)

Prices Effective June 10

	60-62 Gravity, 400 e.p.	61-63 Gravity, 390 e.p.	64-66 Gravity, 375 e.p.
72-74 oct. leaded	4.125–4.50	4.125–4.25	4.25 –4.375
70 oct. unleaded	4.50 –4.75	4.50 –4.75	4.625–4.875
68 oct. unleaded	4.375–4.625	4.375–4.625	4.50–4.75
65 oct. unleaded	4.125–4.375	4.125–4.375	4.25–4.50
60 oct. unleaded	4.00 –4.25	4.00 –4.25	4.00 –4.25

KEROSINE, GAS & FUEL OILS

	June 10	June 3
41-43 grav. w.w. kero.	4.125– 4.625	4.125– 4.625
Gas Oil (Less than ½ of 1% sulfur)		
Below 43 diesel index	3.375 – 3.50	3.375 – 3.50
43-47 diesel index	3.375 – 3.50	3.375 – 3.625
48-52 diesel index	3.375 – 3.625	3.375 – 3.75
53-57 diesel index	3.625 – 3.75	3.625 – 3.75
58 & above	4.00 – 4.125	4.00 – 4.125
No. 2 fuel	3.50 – 3.75	3.50 – 3.75
(g) Diesel oil, ships' bunkers	$1.50 –$1.70	$1.50 –$1.70
(g) Grade C, ships' bunkers	$0.80 –$0.95	$0.80 –$0.95
Grade C cargoes	$0.75 –$0.87	$0.75 –$0.89

MID-CONTINENT LUBES

(At Gulf; in packages, FAS.; in bulk FOB terminals)

	June 10 (i) Packages	Bulk
200 vis. D. 210 brt. stock	28.50–30.50 (2)	22.80 (2)
150 vis. D 210 brt. stock 0-10 p.p.	24.50–26.50 (2)	18.80 (2)
10-25 p.p.	24.00 (1)	18.30 (1)
100 vis. D 210 brt. stock 0-10 p.p.	23.50 (1)	17.80 (1)
10-25 p.p.	23.00 (1)	17.30 (1)
200 vis. No. 3 col. neutral:		
0-10 p.p.	18.50 (1)	12.80 (1)
10-25 p.p.	.....	.....
180 vis. No. 3 col. neutral:		
0-10 p.p.	.....	.....
10-25 p.p.	.....	.....

SOUTH TEXAS LUBES

(Vis. at 100°, c. t. 0, blk. exprt. shp., FOB terminals.)

Unfiltered Pale Oils:	June 10	June 3
Vis. Color		
100 No. 3	6.00 – 6.50	6.00 – 6.50
200 No. 3	7.50 – 8.50	7.50 – 8.50
300 No. 3	8.00 – 9.00	8.00 – 9.00
500 No. 3½	9.00 –10.50	9.00 –10.50
750 No. 4	9.50 – 11.00	9.50 – 11.00
1200 No. 4	10.00 – 13.50	10.00 –13.50
2000 No. 4	10.25	10.25
Red Oils:		
Vis. Color		
100 No. 5-6	6.00 – 6.50	6.00 – 6.50
200 No. 5-6	7.50 – 8.50	7.50 – 8.50
300 No. 5-6	8.00 – 9.00	8.00 – 9.00
500 No. 5-6	9.00 –10.50	9.00 –10.50
750 No. 5-6	9.50 –11.00	9.50 –11.00
1200 No. 5-6	10.00 –13.50	10.00 –13.50
2000 No. 5-6	10.25	10.25

(g) Lighterage, additional at some points, not included. (i) Shipment in bags or in bulk. (j) Shipment in tight barrels. (l) New steel drums.

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for Feb. 21, 1940. These prices in effect June 10, 1940 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Esso (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
*Atlantic City, N. J.	7.6	8.7	4	8.4
*Newark, N. J.	7.6	8.7	4	8.4
Annapolis, Md.	8.35	9.35	5	9.50
Baltimore, Md.	7.75	8.75	5	9
Cumberland, Md.	9.15	10.15	5	10
Washington, D. C.	8.0	9	3	9.5
Danville, Va.	8.95	11.45	6	11.5
Norfolk, Va.	7.75	10.25	6	11
Petersburg, Va.	8.05	10.55	6	11.7
Richmond, Va.	8.05	10.55	6	11
Roanoke, Va.	9.25	11.75	6	11
Charleston, W. Va.	8.55	11.05	6	12.6
Parkersburg, W. Va.	7.85	9.85	6	11.2
Wheeling, W. Va.	8.85	10.75	6	11.8
Charlotte, N. C.	9.9	9.5	7	11.8
Hickory, N. C.	10.45	11.95	7	12.3
Mt. Airy, N. C.	10.3	11.8	7	12.2
Raleigh, N. C.	9.65	9.5	7	11.5
Salisbury, N. C.	9.95	9	7	11.9
Charleston, S. C.	7.75	10.25	7	9.25
Columbia, S. C.	8.6	11.1	7	11.5
Spartanburg, S. C.	9.3	11.8	7	12.2

	Mineral Spirits T.W.	V.M.&P. T.W.
Newark, N. J.	11.5	15.5
Baltimore, Md.	15.5	....
Washington, D. C.	15	....

	Fuel Oils—T.W. No. 1	No. 2	No. 4
Atlantic City, N. J.	8.4	7.4	7.4
Newark	8.4	7.4	7.4
Annapolis, Md.	....	7.0	....
Baltimore	7.5	7.0	6.50
Washington, D. C.	7.75	7.25	7.25
Norfolk, Va.	7.75	6.75	6.75
Petersburg	8.00	7.00	....
Richmond	8.00	7.00	7.00
Charlotte, N. C.	9.25	8.25	....
Hickory	....	8.50	....
Raleigh	9.25	8.00	....
Charleston, S. C.	8.50	7.00	....
Columbia	9.50	8.00	....
Spartanburg	10.20	8.70	....

*Effective Sept. 14, 1939, minimum retail resale price of 11.9c posted thru New Jersey.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w. price, thru territory, except New Jersey. While above posted prices continue at Atlantic City and Newark, dealers will pay net price of 8.6c per gal. for Esso; dealers having pumps marked only Esso, Esso Extra and Standard White gasoline will pay 8.1c per gal. for Esso.

Kerosine—1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore city contract not necessary) except no discount in state of New Jersey.

Naphthas—To buyers taking following quantities at one time: Newark, 2c per gal. on 200 gals. or more, less than 200 gals. 0.5c higher price; Baltimore, 2c off on 25 to 100 gals. and 3c on over 100 gals.; Washington, 2c off to contract buyers.

Socony-Vacuum Oil Co., Inc.

Socony Mobilgas (*Regular Grade*)

	Consumer Tank Car	"Split" Dealer T.W.	Gasoline Taxes	†† Kerosine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	6.7	8.3	*5	8.8
Borough of Richmond (Staten Is.)	6.7	8.3	*5	8.8
Albany, N. Y.	6.6	8.6	5	8
Binghamton, N. Y.	7.9	8.9	5	9.1
Buffalo, N. Y.	6.9	8.6	5	9.1
Jamestown, N. Y.	7.2	8.6	5	7.8
Plattsburg, N. Y.	7.1	9.6	5	9.2
Rochester, N. Y.	7.2	8.7	5	8.4
Syracuse, N. Y.	7.2	8.4	5	8.7
Bridgeport, Conn.	6.8	7.4	4	8.3
Danbury, Conn.	7.3	8.6	4	9.3
Hartford, Conn.	6.9	7.5	4	8
New Haven, Conn.	6.8	7.8	4	7.8
Bangor, Me.	6.9	9.1	5	8
Portland, Me.	6.6	8.5	5	8.5
Boston, Mass.	6.5	7.5	4	8.5
Concord, N. H.	7.4	9.7	5	9.1
Lancaster, N. H.	8.2	10.7	5	10.2
Manchester, N. H.	7.3	7	5	8.9
Providence, R. I.	6.5	7.75	4	8.3
Burlington, Vt.	7.1	9.4	5	9
Rutland, Vt.	7.5	9.5	5	9.2

	Mineral Spirits T.W.	V.M.&P. T.W.
Buffalo, N. Y.	9.9	10.6
†New York City	8.9	9.5
Rochester, N. Y.	10.7	11.4
Syracuse, N. Y.	11.6	12.3
Boston, Mass.	11.5	11.5
Bridgeport, Conn.	11.5	12
Hartford, Conn.	11	11.5
Providence, R. I.	11.5	12.5

Fuel Oils—T. W.

	Nos. 2 & 3
New York City	7.3
Albany, N. Y.	7.5
Rochester, N. Y.	7.5
Boston, Mass.	7.3
Bangor, Me.	7.8
Manchester, N. H.	8.1
Burlington, Vt.	8.0
Hartford, Conn.	7.7
New Haven, Conn.	7.7
Providence, R. I.	7.3

*Plus 2% city sales tax computed at time of each sale.

†Prices apply to consumers only in quantities over 1000 gals. annually; for quantities under 1000 gals. annually, add 0.5c per gal.

††Same prices apply for No. 1 fuel.

Discounts: Gasoline—To undivided dealers, 0.5c less than "split" dealer t.w.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial T.C.	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Philadelphia, Pa.	7	8.5	5	10.5
Pittsburgh	8	9.5	5	10.5
Allentown	8	9.5	5	10.5
Erie	8	9.5	5	10
Scranton	7.5	9	5	10.5
Altoona	8	10	5	10.5
Emporium	8	10	5	10.5
Indiana	8	10	5	10.5
Uniontown	8	10	5	10.5
Harrisburg	8	9.5	5	10.5
Williamsport	8	9.5	5	10
Dover, Del.	...	9	5	10.5
Wilmington	...	8.5	5	10
Boston, Mass.	...	7.5	4	8.5
Springfield, Mass.	...	9	4	9.0
Worcester, Mass.	...	7.6	4	8.6
Fall River, Mass.	...	8	4	8.5
Hartford, Conn.	...	7.5	4	8.5
New Haven, Conn.	...	7.8	4	8.5
Providence, R. I.	...	8	4	8.5
Atlantic City, N. J.	...	8.6	4	8.4
Camden, N. J.	...	8.6	4	8.1
Trenton, N. J.	...	8.6	4	8.4
Annapolis, Md.	...	9.35	5	10
Baltimore, Md.	...	8.75	5	9
Hagerstown, Md.	...	9.85	5	10
Richmond, Va.	...	10.55	6	11
Wilmington, N. C.	...	10.35	7	10.8
Brunswick, Ga.	...	8	7	*11
Jacksonville, Fla.	...	7.5	8	10

	Mineral Spirits T.W.†	V.M.&P. T.W.†
Philadelphia, Pa.	12	14.5
Lancaster, Pa.	13.5	16
Pittsburgh, Pa.	14.5	14.5

	Fuel Oils—T.W. 1	2	3	4	5	6
Phila., Pa.	8.5	7.00	7.00	7.00	4.25	3.50
Allentown, Pa.	8.5	6.5	6.5	6.5	....	....
Wilmington, Del.	8.00	7.00	7.00	7.00	....	....
Springfield, Mass.	9.0	7.1	....	....	....	....
Worcester, Mass.	8.6	7	....	7	....	....
Hartford, Conn.	8.5	6.9	....	6.9	....	....

*Does not include 1c Georgia kerosine tax.

†Mineral Spirits prices also apply to Stoddard Solvent; V.M.&P. prices also apply to Light Cleaners Naphtha.

Discounts:

Gasoline—to undivided dealers, 0.5c off dealer t.w., except Georgia & Florida dealer t.w. and undivided dealer t.w. prices are same. At Scranton, Pa., 1c per gal. voluntary discount allowed to dealers only.

Kerosine—Thru Penna. & Delaware, 2c off t.w. price on t.w. deliveries of 25 gals. or more at one time.

Naphthas—Philadelphia, 200 gals. or more at one time, 2c off Lancaster, contract buyers taking 1000 gals. or more per year, one drum up, 2c off; non-contract buyers, 200 gals. or more at one time, 2c off. Pittsburgh, 500 gals. or more at one time, 2c off.

S. O. Ohio

***Sohio X-70 Gasoline (*Regular Grade*)**

	Consumer T.W.	Divided Dlr.	‡S.S.	Gasoline Taxes	†Kerosine T.W.
Ohio, Statewide	10.5	9.5	12.5	5	8
Akron	10.5	8	9.5	5	8
Cincinnati	10.5	9	11.5	5	8
Cleveland	10.5	8.5	11	5	8
Columbus	10.5	9	11.5	5	8
Dayton	10.5	9	11.5	5	8
Marietta	10.5	9	11.5	5	8
Portsmouth	10.5	9.5	12.5	5	8
Toledo	10.5	7.5	9.5	5	8
Youngstown	10.5	9	11.5	5	7.5

Esso Aviation Gasoline—Thru Ohio

	Consumer T.W.	Gasoline Taxes
74 octane	15.5	5
80 octane	16.5	5
87 octane	17.5	5

S. O. Ohio (Cont'd)

†Naphthas — Statewide T.W.

S.R. Solvent	12.75
D.C. Naphtha	13.25
V.M.&P. Naphtha	13.25
Varnolene	13.25
Sohio Solvent	13.25

††Fuel Oils—T.W.

	No. 1	No. 2	No. 3
Toledo	7.00	7.00	6.50
Rest of Ohio	7.50	7.50	7.00

*Renown (third-grade) prices are same as X-70 unless otherwise noted.

†Kerosine prices are ex 1c state tax. Naphtha prices are ex 1c federal & 4c state tax.

‡Prices at company-operated stations.

††Prices are for full compartment hose dumps; bucket dumps are 0.5c per gal. higher.

Discounts:

X-70 gasoline—to undivided dealers, 0.5c off dealer t.w.

Esso aviation—on contract to hangar operators and resellers, 2c off consumer t.w.

Naphthas—to contract consumers off t.w. prices: 300 to 999 gals., 0.5c; 1000 to 2499 gals., 0.75c; 2500 to 4999 gals., 1c; 5000 or more gals., 1.5c.

S. O. Kentucky

Crown Gasoline (*Regular*)

Standard or Kyso (*Third Grade*)

	†Net Dealer Crown	††Standard or Kyso	Gasoline Taxes	Kerosine T.W.
Covington, Ky.	8.5	7.5	6	9.5
Lexington, Ky.	9.5	8	6	10
Louisville, Ky.	8.5	6.5	6	9
Paducah, Ky.	9.5	8	6	9
Jackson, Miss.	9	8	7	*9.5
Vicksburg, Miss.	9	8	7	*9
Birmingham, Ala.	9.5	8	*8	9
Mobile, Ala.	9	7	*9	8
Montgomery, Ala.	10	9	*9	*9
Atlanta, Ga.	10.5	7.5	7	*10
Augusta, Ga.	10	9	7	*9
Macon, Ga.	7.5	7	7	*10
Savannah, Ga.	9.5	8	7	*8
Jacksonville, Fla.	8	7	8	8
Miami, Fla.	9	8	8	8
Pensacola, Fla.	9	8	*9	8.5
Tampa, Fla.	10	9	8	8

*Taxes: In tax column are included these city and county gasoline taxes: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have 1c kerosine tax, Mississippi 0.5c, not included in above prices.

†Consumer t.w. prices are same as net dealer prices except at Tampa. Tampa consumer t.w. prices are Crown 13c, Standard 11.5c.

††Standard, a leaded 3rd grade, is sold in Ky., Ala., Ga., and Fla.; Kyso, an unleaded 3rd grade, is sold in Miss.

Discounts:

Gasoline—Tampa: Temporary discount of 3c on Crown, 2.5c on Standard, off Consumer T.W. prices which see above.

S. O. Indiana

Red Crown (*Regular Grade*)

Stanolind (*Third Grade*)

	Red Dealer Prices Crown Cons. T.W.	Crown	Stanolind	Gasoline Taxes	Kerosine T.W.
Chicago, Ill.	11.1	9.1	6.9	4	10
Decatur, Ill.	9.6	8.1	6	4	9.5
Joliet, Ill.	11.1	9.6	6.7	4	10
Peoria, Ill.	11.1	8.7	8.1	4	10
Quincy, Ill.	10.9	9.4	8.5	4	9.8
Indianapolis, Ind.	11.8	9.3	8.4	5	*10.2
Evansville, Ind.	11.6	10.1	9.1	5	*10.5
South Bend, Ind.	11.8	10.3	8.8	5	*10.2
Detroit, Mich.	9.6	8.1	7.1	4	7.6
Grand Rapids, Mich.	9.2	7.7	7.2	4	9
Saginaw, Mich.	8.2	8.7	8.2	4	9.3
Green Bay, Wis.	11.9	10.4	9.9	5	10.3
Milwaukee, Wis.	11.3	9.8	9.3	5	10.2
La Crosse, Wis.	11.5	10	9.5	5	10.4
Minneapolis-St. Paul	11.5	9.5	9	5	10.4
Duluth, Minn.	11.9	10.4	9.9	5	10.8
Mankato, Minn.	11.5	10	9.5	5	10.4
Des Moines, Ia.	10.9	8.4	7.4	4	*9.8
Davenport, Ia.	11.1	9.6	8.4	4	*10
Mason City, Ia.	11.3	9.8	6.9	4	*10.2
St. Louis, Mo.	10.7	8.7	7.5	*4	8
Kansas City, Mo.	10.4	8.9	6.9	*4	8
St. Joseph, Mo.	10.4	8.0	7.5	*4	7.9
Fargo, N. D.	12.7	11.2	8.8	5	11.6
Huron, S. D.	12	10.5	10	5	10.9
Wichita, Kans.	9.3	7.6	5.5	4	7

(Continued on next page)

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for Feb. 21, 1940. These prices in effect June 10, 1940 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. Indiana (Cont'd)

Stanavo Aviation 73 Octane

Chicago, Ill	14.9		
Detroit, Mich	16.5	4	
Milwaukee, Wis	15.1	5	
Minneapolis, Minn	15.3	5	
St. Louis, Mo	14.5	3	
Kansas City, Mo	14.2	*4	
Fargo, N. D	16.5	5	
Huron, S. D	15.8	5	

	Oleum Spirits	V.M.&P. Naphtha	Stanisoi	*Taxes
	(Prices are base prices before discounts)			
Chicago	12.7	13	12.4	4
Detroit	15.2	14.2	15.7	4
K. C., Mo	12.9	13.9	13.4	1
St. Louis	13.2	14.2	12.4	1
Milwaukee	13.8	14.8	14.3	5
Minneap'ls	14	15	12.7	5

†Fuel Oils—T.W.	No. 1 Fuel	Stanolex Furnace
Chicago	**6.50	6.50
Indianapolis	....	*7.5
Detroit	....	6.6
Milwaukee	8.2	7.7
Minneapolis	7.5	7.5
St. Louis	7.0	6.50
Kansas City	6.8	6.8

*Taxes: In gasoline tax column are included these city taxes—Kansas City, St. Joseph, and St. Louis, 1c. Indiana kerosine and fuel oil prices are ex 4c state tax; Iowa kerosine prices are ex 3c state tax. In naphtha tax column are included 1c federal tax and state taxes.

†Prices for small-lot deliveries range up to 2c higher than above prices.

**For 400 gals. & over; 150 to 399 gals., 7.25c; 1 to 149 gals., 8.25c.

S. O. Nebraska

Standard Red Crown Gasoline (*Regular Grade*)

	T.W.	Dealer	Gasoline Taxes	Kerosine T.W.
Omaha	10.5	8.9	6	9.0
McCook	11	7.9	6	9.5
Norfolk	11	8.9	6	9.9
North Platte	11.3	8.5	6	10.2
Scottsbluff	11.9	9	6	10.5

S. O. Louisiana

Esso (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Little Rock, Ark	7.25	9.75	7.5	10
Alexandria, La	6.75	9.25	8	*9.5
Baton Rouge, La	6.75	9.25	8	*9.5
New Orleans, La	5.75	8.25	8	*9
Lake Charles, La	6.75	9.25	8	*9
Shreveport, La	5.5	8	8	*8
Lafayette, La	7	9.5	8	*9
Bristol, Tenn	10.25	9.50	8	12
Chattanooga, Tenn	9.5	11	8	12
Knoxville, Tenn	10	11.5	8	12.5
Memphis, Tenn	8	9.5	8	11
Nashville, Tenn	9	8.4	8	11.5

*New Orleans kerosine price is ex 1c parish tax, and all Louisiana kerosine prices are ex 1c state tax.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w.

Humble Oil & Refining Co.

Humble Motor Fuel (*Regular Grade*)

	*T.W.	S.S.	Gasoline Taxes	Kerosine T.W
Dallas, Tex	6	10	5	6
Ft. Worth, Tex	6	10	5	7
Houston, Tex	8.5	12.5	5	8
San Antonio, Tex	7	11	5	8

Thriftane (Leaded, 67 Octane, Purple Gasoline)

Dallas	5	8	5
Ft. Worth	5	8	5
Houston	7	10.5	5
San Antonio	5	8	5

74 Octane Aviation Gasoline, Clear

	Tank Car
FOB Baytown, Tex	8.5

*To all classes of dealers & consumers.

The Texas Co.

	Gasoline—Dealer T.W. Fire-Chief (*Regular*)	Indian (*3rd Grade*)	Gasoline Taxes
Dallas, Tex	6	5	5
Ft. Worth, Tex	6	5	5
Wichita Falls, Tex	8	5	5
Amarillo, Tex	8	5	5
Tyler, Tex	7	5	5
El Paso, Tex	8	7	5
San Angelo, Tex	7	5	5
Waco, Tex	7	5	5
Austin, Tex	8.5	7	5
Houston, Tex	8.5	7	5
San Antonio, Tex	7	5	5
Port Arthur, Tex	8.5	5	5

Continental Oil

Conoco Bronz-z-z (*Regular Grade*)

	†T.W.	Dealer	Gasoline Taxes	Kerosine ‡T.W.
Denver, Col	8	..	5	10.5
Grand Junction, Col	12.5	..	5	12.5
Pueblo, Col	9	..	5	9
Casper, Wyo	11.5	..	5	11.5
Cheyenne, Wyo	9	..	5	11
Billings, Mont	12	..	6	12
Butte, Mont	10	..	6	13
Great Falls, Mont	12	..	6	12
Helena, Mont	10	..	6	12.5
Salt Lake City, Utah	10.5	10.5	5	14
Boise, Ida	*14.1		6	16
Twin Falls, Ida	*15.1	*15.1	6	16.5
Albuquerque, N. M	8		*6.5	10
Roswell, N. M	9.5	9.5	*6.5	8
Santa Fe, N. M	10.5	10.5	*7	10
Ft. Smith, Ark	9.5	..	5	7.5
Little Rock, Ark	9.25	..	7.5	8
Texarkana, Ark	8	..	5	7
Muskogee, Okla	7	..	5	7
Oklahoma City, Okla	5	..	5	6.5
Tulsa, Okla	6	..	5	6

Demand Gasoline (*Third Grade*)

Denver, Col	6	..	5	....
Grand Junction, Col	11.5	..	5	....
Pueblo, Col	7	..	5	....
Casper, Wyo	10.5	..	5	....
Cheyenne, Wyo	8	..	5	....
Billings, Mont	11	..	6	....
Butte, Mont	9	..	6	....
Great Falls, Mont	11	..	6	....
Helena, Mont	9	..	6	....
Salt Lake City, Utah	9.5	9.5	5	....
Boise, Ida	*13.1		6	....
Twin Falls, Ida	*14.1	*14.1	6	....
Albuquerque, N. M	7	..	*6.5	....
Roswell, N. M	8.5	8.5	*6.5	....
Santa Fe, N. M	9.5	9.5	*7	....
Ft. Smith, Ark	6.25	..	5	....
Little Rock, Ark	7.5	..	7.5	....
Texarkana, Ark	5	..	5	....
Muskogee, Okla	6	..	5	....
Oklahoma City, Okla	4.50	..	5	....
Tulsa, Okla	5	..	5	....

Conoco Special Gasoline (Aviation)

	T.W. & Dealer Price	Gasoline Taxes
Denver, Colo	15	5
Cheyenne, Wyo	15.5	5
Helena, Mont	22.5	6
Salt Lake City, Utah	18	5
Albuquerque, N. M	14	*6.5

*Taxes: In gasoline tax column are included these city taxes—Albuquerque and Roswell, 0.5c; Santa Fe, 1c. Idaho prices include 0.1c to cover 1-mill tax for toll bridges.

†To consumers; also to dealers at points where no dealer prices are shown.

‡To consumers and dealers.

S. O. California

Standard Gasoline (*Regular Grade*)

	T.W.	S.S.	Gasoline Taxes	Kerosine T.W.
San Francisco, Cal	12	13	4	11.5
Los Angeles, Cal	11.5	12.5	4	10
Fresno, Cal	13	14	4	12.5
Phoenix, Ariz	14	15	6	*12.5
Reno, Nev	14	15	5	13.5
Portland, Ore	12.5	13.5	6	13.5
Seattle, Wash	12.5	13.5	6	13.5
Spokane, Wash	14	15	6	16.5
Tacoma, Wash	12.5	13.5	6	13.5

S. O. California (Cont'd)

Flight Gasoline (*Third Grade*)

San Francisco, Cal	10	11	4	....
Los Angeles, Cal	9.5	10.5	4	....
Fresno, Cal	11	12	4	....
Reno, Nev	12	13	5	....
Phoenix, Ariz	11	12	6	....
Portland, Ore	10.5	11.5	6	....
Seattle, Wash	10.5	11.5	6	....
Spokane, Wash	12	13	6	....
Tacoma, Wash	10.5	11.5	6	....

Stanavo Aviation Gasoline

Phoenix, Ariz	17.5	..	6	....
Los Angeles, Cal	15	..	4	....
San Francisco, Cal	15.5	..	4	....
Reno, Nev	17.5	..	5	....
Portland, Ore	16	..	6	....
Seattle, Wash	16	..	6	....
Spokane, Wash	19	..	6	....

*Taxes: Arizona kerosine prices are ex 5c state tax.

Discounts:

To 100% dealers—3c off t.w. on Standard and Stanavo Aviation; 2c off t.w. on Flight.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-Star Imperial Gasoline

	(*Regular Grade*) T.W.	Gasoline Taxes	Kerosine T.W.
Hamilton, Ont	15.5	8	16
Toronto, Ont	15.5	8	16
Brandon, Man	21	7	22
Winnipeg, Man	19.5	7	20.5
Regina, Sask	18	7	20
Saskatoon, Sask	21	7	23
Edmonton, Alta	18	7	20
Calgary, Alta	16	7	18
Vancouver, B. C	16	7	23
Montreal, Que	16	8	16.5
St. John, N. B	15	10	19
Halifax, N. S	15	10	19

Discounts: To undivided dealers, 1c off t.w. price, except Maritime Provinces where undivided dealers pay t.w. price, and except Vancouver, B. C. where both divided and undivided dealers get 2c off t.w. price. Divided dealers pay t.w. price thru territory.

Price Changes

(These changes have been made in price tables)

Socony-Vacuum — Mobilgas "split" dealer t. w.:

Binghamton cut 0.6c, June 4.

Manchester cut 1.7c, May 22.

Atlantic Refining—White Flash dealer t. w.:

Brunswick cut 2c, June 1.

Jacksonville cut 0.5c, May 30.

S. O. Louisiana—Kerosine:

New Orleans t. w. cut 1c, June 3.

Continental—Conoco Bronz-z-z:

Boise t. w. cut 1c and dealer price eliminated, June 7.

Albuquerque t. w. up 1c, June 4.

Continental—Demand:

Boise t. w. cut 1c and dealer price eliminated, June 7.

Albuquerque t. w. up 1c, June 4.

Ft. Smith t. w. cut 0.75c, April 13.

Coming Meetings

JUNE

National Retail Credit Assn., Annual Convention; Petroleum Group meets June 18-20. Gunter Hotel, Mon.-Thurs., June 17-20. Southwest Petroleum Credit Group, San Antonio, Tex., Mon.-Thurs., June 17-20.

American Society of Mechanical Engineers, Milwaukee, Wis., Mon.-Thurs., June 17-20.

Pennsylvania Grade Crude Oil Assn., 17th Annual Meeting, Hotel Emery, Bradford, Penna., Thurs.-Fri., June 20-21.

American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J., Mon.-Fri., June 24-28.

AUGUST

National Assn. of Petroleum Retailers, 8th Annual Convention, LaSalle Hotel, Chicago, Ill., Tues.-Thurs., Aug. 20-22.

SEPTEMBER

American Society of Mechanical Engineers, Spokane, Wash., Tues.-Thurs., Sept. 3-5.

American Chemical Society, Detroit, Mich., Mon.-Fri., Sept. 9-13.

Oil Trades Assn. of New York, Sports Day, Pelham Country Club, Pelham, N. Y., Tues., Sept. 17.

National Petroleum Assn., Hotel Traymore, Atlantic City, N. J., Wed.-Fri., Sept. 18-20.

OCTOBER

National Lubricating Grease Institute, Annual Convention, Stevens Hotel, Chicago, Ill., Mon.-Tues., Sept. 30, Oct. 1.

North American Gasoline Tax Conference, Whitley Hotel, Montgomery, Ala., Thurs.-Sat., Oct. 3-5.

American Gas Assn., Atlantic City, New Jersey, Mon.-Thurs., Oct. 7-10.

National Safety Congress & Exposition, Hotel Stevens, Chicago, Ill., Mon.-Fri., Oct. 7-11.

Indiana Independent Petroleum Assn., Fall Convention, Hotel Severin, Indianapolis, Ind., Wed. and Thurs., Oct. 9-10.

Automobile Manufacturers Assn., 1940 Autoshow, New York, Sat., Oct. 12.

Independent Petroleum Assn. of America, Annual Meeting, Dallas, Texas, Wed.-Fri., Oct. 16-18.

Oil Trades Assn. of New York, Annual Banquet Waldorf-Astoria Hotel, New York, N. Y., Tues., Oct. 29.

NOVEMBER

Texas Mid-Continent Oil & Gas Assn., Fort Worth, Tex., Thurs.-Sat., Oct. 31-Nov. 2.

American Petroleum Institute, 21st Annual Meeting, Stevens Hotel, Chicago, Ill., Mon.-Fri., Nov. 11-15.

Arkansas Oil Dealers Assn., Little Rock, Ark., Thurs., Nov. 14.

Arkansas Society for Testing Materials, Hotel Mayflower, Washington, D. C., Thurs., Nov. 14.

DECEMBER

Exposition of Chemical Industries, Grand Central Palace, New York, N. Y., Sun.-Fri., Dec. 1-6.

MARCH, 1941

American Society for Testing Materials, Hotel Mayflower, Washington, D. C., March 3-7.

Indiana Independent Petroleum Assn., 1941 Spring Convention & Refiners' & Supliers' Exhibit, Hotel Severin, Indianapolis, Ind., March 11-13.

APRIL, 1941

National Petroleum Assn., semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 24-25.

JUNE, 1941

American Society for Testing Materials, 44th Annual Meeting, Palmer House, Chicago, Ill., June 23-27.

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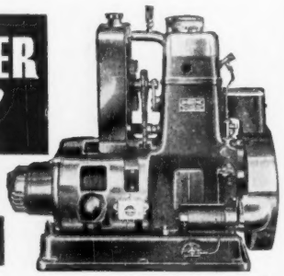

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CRUDE OIL PRICES

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN & CENTRAL STATES FIELDS

PENNSYLVANIA GRADE

Posted by Jos. Seep Purch. Agency (May 22, 1940)

Bradford-Allegany	$2.50
Southwest Penna	$2.15
Eureka (West Va.)	$2.09
Corning, O. (Nov. 4, 1939)	$1.12

Posted by Tide Water Assoc. Oil Co. (May 22, 1940)

Bradford-Allegany	$2.50

Posted by The Pennzoil Co. (May 22, 1940)

National Transit	$2.13*

Posted by Valvoline Pipe Lines (May 22, 1940)

Bradford (Elk & McKean Counties, Pa.)	$2.50
Warren, Forest, Venango, Clairon & Butler Counties, Pa.	$2.43
Allegheny, Beaver, Washington & Greene Counties, Pa.	$2.15
West Virginia	$2.09
South Eastern Ohio	$2.05

*Applies to Cochran, Franklin, Hamilton & Doolittle districts; prices in other lower districts range down to $2.38 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co. (Oct. 9, 1939)

Midland, Midland County	$1.02
Sherman	$0.97
Clare-Freeman	$0.97

Posted by Simrall Corp. (Oct. 9, 1939)

Crystal, Greendale, Porter, Vernon and Wise	$1.02
Beaverton, Buckeye, Bentley, Edenville	$1.00
Freeman and Redding	$0.97
Arenac	$0.82
West Branch (Nov. 1, 1939)	$0.85

Posted by Sohio Corp. (Michigan Division)

Allegan & Kent Counties (April 27, 1940)	$1.08
Van Buren County (May 1, 1940)	$1.08

Posted by Bay Pipe Line Corp. (Oct. 9, 1939)

Bentley and Buckeye	$1.00
Saginaw and Wise $1.02 Clare	$0.76

ILLINOIS-INDIANA-KENTUCKY

Posted by Ohio Oil Co. (June 8, 1939)

Illinois and Western Indiana	$0.95
Illinois Basin	$1.05

Posted by Sohio Corp.

Illinois Basin:	
Salem (Lake Centralia) (Oct. 21, 1939)	$1.05
Balance of Illinois Basin (June 8, 1939)	$1.05
Griffin (So. Ill.-Ind.) pool (May 25, 1940)	$1.00

Posted by Carter Oil Co. (June 10, 1939)

Louden, Fayette County, Ill.	$1.05

Posted by Mohawk Oil Lines, Inc. (June 1, 1940)

Southern Ill. heavy $0.90 light	$1.00

Posted by Ashland Oil & Transportation Co. (June 9, 1939)

Somerset Oil in Ashland Lines, Kentucky:

Big Sandy River $1.02 Kentucky River	$1.10

Posted by Sohio Corp. (June 9, 1939)

Birk City, Ky. Area	$0.90
Corydon, Ky. Area (Henderson)	$0.90

Posted by Owensboro-Ashland Co.

Owensboro, Ky. Area (June 9, 1939)	$1.09

CANADIAN FIELDS

Posted by Imperial Oil Limited
Western Ontario (Nov. 6, 1939)

Petrolia	$2.10	Oil Springs	$2.17

Alberta Turner Valley (Jan. 5, 1938)
(Prices f.o.b. field tankage)

Crude Oil

40-40.9°	$1.14	53-53.9	$1.40
41-41.9	1.16	54-54.9	1.42
42-42.9	1.18	55-55.9	1.44
43-43.9	1.20	56-56.9	1.46
44-44.9	1.22	57-57.9	1.48
45-45.9	1.24	58-58.9	1.50
46-46.9	1.26	59-59.9	1.52
47-47.9	1.28	60-60.9	1.54
48-48.9	1.30	61-61.9	1.56
49-49.9	1.32	62-62.9	1.58
50-50.9	1.34	63-63.9	1.60
51-51.9	1.36	64-64.9	1.62
52-52.9	1.38		

Crude Naphtha, 65 grav. & above	$2.14

Absorption Gasoline

90% Rec., 20 lb. Reid v.p.	$1.94
90% Rec., 17 lb. Reid v.p.	$2.08

*MID-CONTINENT—Oklahoma-Kansas

	S. O. Indiana	Carter Oil Co.	Magnolia Shell	Continental Texas Co.	Sinclair Prairie
Below 21°	$0.70	$0.60	....	....	....
21-21.9	.72	.63	....	....	....
22-22.9	.74	.66	....	....	....
23-23.9	.76	.69	....	....	....
24-24.9	.78	.72	....	....	....
25-25.9	.80	.75	....	....	$0.58
26-26.9	.82	.78	....	....	.63
27-27.9	.84	.81	....	....	.68
28-28.9	.86	.84	$0.86	....	.73
29-29.9	.88	.87	.88	....	.78
30-30.9	.90	.90	.90	....	.82
31-31.9	.92	.92	.92	....	.86
32-32.9	.94	.94	.94	....	.90
33-33.9	.96	.96	.96	....	.96
34-34.9	.98	.98	.98	....	.98
35-35.9	1.00	1.00	1.00	1.00	1.00
36-36.9	1.02	1.02	1.02	1.02	1.02
37-37.9	1.04	1.04	1.04	1.04	1.04
38-38.9	1.06	1.06	1.06	1.06	1.06
39-39.9	1.08	1.08	1.08	1.08	1.08
40 & above	1.10	1.10	1.10	1.10	1.10

*Effective in 1938 by Carter Oil, Oct. 13, posting in Okla. only; Continental Oil, Oct. 11, with lowest grade below 29; Magnolia, Oct. 12, posting in Okla. only; Shell, Oct. 22; S. O. Indiana, Oct. 17; The Texas Co., Oct. 12. Aug. 31, 1939, by Sinclair-Prairie.

*North-North Central and Central Texas

	Stanolind	Sinclair Texas Co. Continental Magnolia
Below 21°	$0.60	....
21-21.9	.62	....
22-22.9	.64	....
23-23.9	.66	....
24-24.9	.68	$0.79
25-25.9	.70	for
26-26.9	.72	oil
27-27.9	.74	below
28-28.9	.76	29°.
29-29.9	.78	.81
30-30.9	.80	.83
31-31.9	.82	.85
32-32.9	.84	.87
33-33.9	.86	.89
34-34.9	.88	.91
35-35.9	.90	.93
36-36.9	.92	.95
37-37.9	.94	.97
38-38.9	.96	.99
39-39.9	.98	1.01
40 & above	1.00	1.03

*Effective Oct. 11, 1938 by Continental, in North Tex.; Oct. 12, 1938, by Texas Co. in North & North Central Texas. Texas Co.'s lowest grade is 28-28.9, at $0.79; by Magnolia, Dec. 3, 1938, in N. and N. Central Texas; Oct. 5, 1939 by Sinclair Prairie in Mexia and N. Cent. Texas.

Jefferson County, Texas—Beaumont

(Posted by Magnolia Petroleum Co., Effective Oct. 2, 1939, and by Stanolind Oil & Gas Co., for West Beaumont, Effective Oct. 2, 1939)

Below 20°	$0.86	30-30.9	$1.08
20-20.9	.88	31-31.9	1.10
21-21.9	.90	32-32.9	1.12
22-22.9	.92	33-33.9	1.14
23-23.9	.94	34-34.9	1.16
24-24.9	.96	35-35.9	1.18
25-25.9	.98	36-36.9	1.20
26-26.9	1.00	37-37.9	1.22
27-27.9	1.02	38-38.9	1.24
28-28.9	1.04	39-39.9	1.26
29-29.9	1.06	40 & above	1.28

TEXAS FIELDS

Posted by Humble Oil & Refining Co.

*West Central Texas (Aug. 11, 1939)

24-24.9	$0.71	33-33.9	$0.89
25-25.9	.73	34-34.9	.91
26-26.9	.75	35-35.9	.93
27-27.9	.77	36-36.9	.95
28-28.9	.79	37-37.9	.97
29-29.9	.81	38-38.9	.99
30-30.9	.83	39-39.9	1.01
31-31.9	.85	40 & above	1.03
32-32.9	.87		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young Counties.

Effective Aug. 29, 1939, Shell posted in Fisher county, Tex., prices 3c lower than Humble's West Central Texas prices; Shell's schedule begins with below 25, at $0.68 and ends with 40 & above, at $1.

Note: Effective Oct. 1, 1937, Humble prices are based on 100% tank tables at 60F.

*East Central Texas (Aug. 11, 1939)

23-23.9	$0.78	32-32.9	$0.96
24-24.9	.80	33-33.9	.98
25-25.9	.82	34-34.9	1.00
26-26.9	.84	35-35.9	1.02
27-27.9	.86	36-36.9	1.04
28-28.9	.88	37-37.9	1.06
29-29.9	.90	38-38.9	1.08
30-30.9	.92	39-39.9	1.10
31-31.9	.94	40 and above	1.12

Posted by Pan American Pipe Line Co.
(Oct. 2, 1939)

Cayuga, Anderson county	$0.78

*Including Anderson, Cherokee, Limestone, Navarro counties.

PANHANDLE TEXAS

	Humble (Aug. 11, 1939)		Texas Co. (Oct. 2, 1939)	
	Gray County	Carson Hutchinson	Sweet	Sour
28-28.9	$0.72	$0.67	....	....
29-29.9	.74	.69	....	....
30-30.9	.76	.71	....	....
31-31.9	.78	.73	....	....
32-32.9	.80	.75	....	....
33-33.9	.82	.77	....	....
34-34.9	.84	.79	$0.84	$0.79
35-35.9	.86	.81	.86	.81
36-36.9	.88	.83	.88	.83
37-37.9	.90	.85	.90	.85
38-38.9	.92	.87	.92	.87
39-39.9	.94	.89	.94	.89
40 & above	.96	.91	.96	.91

Effective Aug. 31, 1939, Sinclair Prairie met Humble in Panhandle Texas. Dec. 3, 1938, Magnoiia posted same schedule as Humble.

*EAST TEXAS

By Humble, Shell, Sinclair-Prairie, Stanolind, Gulf, Magnolia, Texas Co., Tide Water-Associated $1.10

*Effective dates: Aug. 11, 1939, by Humble and Tide Water-Associated; Aug. 29, 1939, by Stanolind; Oct. 2, 1939 by Sinclair Prairie; Oct. 5, 1939 by Shell; Oct. 12, 1938, by Magnolia, Texas Co.; Oct. 13, 1938, by Gulf.

*Includes Cherokee, Gregg, Rusk, Smith and Upshur counties.

Posted by Shell Oil Co., Inc. (Oct. 5, 1939)

Polk County, Tex. (Livingston area)	$1.10

NORTHEAST TEXAS

(Posted by Humble, Oct. 2, 1939)

Talco	$0.65

(Posted by Magnolia, Oct. 12, 1938)

Cass County and Panola County, Tex.:

Magnolia posts below 25° at $0.73, plus 2c differential for each degree, to top grade of 40 & above, at $1.05.

(Posted by The Texas Co., Oct. 12, 1938)

Cass County	$1.05

(a) WEST TEXAS and NEW MEXICO

	Humble	Stanolind	Shell	Texas Co. Sinclair (c)
Below 20°	$0.53	....	$0.53	....
20-20.9	.55	....	.55	....
21-21.9	.57	....	.57	....
22-22.9	.59	$0.67	.59	....
23-23.9	.61	for	.61	....
24-24.9	.63	oil	.63	....
25-25.9	.65	Below	.65	$0.65
26-26.9	.67	26°.	.67	.67
27-27.9	.69	.69	.69	.69
28-28.9	.71	.71	.71	.71
29-29.9	.73	.73	.73	.73
30-30.9	.75	.75	.75	.75
31-31.9	.77	.77	.77	.77
32-32.9	.79	.79	.79	.79
33-33.9	.81	.81	.81	.81
34-34.9	.83	.83	.83	.83
35-35.9	.85	.85	.85	.85
36-36.9	.87	.87	.87	.87
37-37.9	.89	.89	for	for
38-38.9	.91	.91	oil	oil
39-39.9	.93	.93	36° &	36° &
40 & above	.95	.95	above.	above.

Posted by Magnolia Petroleum Co.

(Oct. 12, 1938 in West Texas;
Oct. 15, 1939 in Lea County, N. Mex.)

	West Texas	N. Mex.		West Texas	N. Mex.
Below 25	$0.63	$0.63	33-33.9	$0.81	$0.81
25-25.9	.65	.65	34-34.9	.83	.83
26-26.9	.67	.67	35-35.9	.85	.85
27-27.9	.69	.69	36-36.9	.87	.87
28-28.9	.71	.71	37-37.9	.89	for
29-29.9	.73	.73	38-38.9	.91	oil
30-30.9	.75	.75	39-39.9	.93	36 &
31-31.9	.77	.77	40 & over.	.95 above	
32-32.9	.79	.79			

Note: Magnolia's West Texas postings are in Crane, Glasscock, Howard, Mitchell, Upton and Winkler counties.

Pecos County, West Texas

(Posted by Humble Aug. 11, 1939 and Shell, Aug. 29 '39)

Pecos	$0.78
Yates Shallow Pool (Shell only)	.65

Posted by Sinclair Prairie Oil Marketing Co.

(Aug. 31, 1939)

Eddy county, N. Mex.	$0.77

(a) Effective Aug. 11, 1939 by Humble; Shell Oil, Aug. 29, 1939; by The Texas Co., Oct. 12, 1938; Stanolind, Aug. 29, 1939; Sinclair Prairie, Aug. 31, 1939.

(c) Texas Co. posts $0.65 for below 26; Sinclair Prairie, $0.63 for below 25.

Note: Humble's postings are in these counties: Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler and Yoakum, West Texas; and Lea county, N. Mex.; Shell, in Crane, Ector, Glasscock, Howard, Upton, Winkler, Yoakum, Lea; Stanolind in Hendrick and Henderson field, Winkler county; Texas Co. in Ward, Winkler and Lea

Posted by Continental Oil Co. (Oct. 11, 1938)

Artesia, Jackson and Maljamar pools, New Mexico: gravity schedule beginning with below 29, at $0.61; 29-29.9, at $0.63; plus 2c differential for each gravity, up to 40 & above, at $0.85.

COLORADO

Posted by Continental Oil Co. (Oct. 11, 1938)
Ft. Collins and Wellington

Below 29	$0.81	35-35.9	$0.95
29-29.9	.83	36-36.9	.97
30-30.9	.85	37-37.9	.99
31-31.9	.87	38-38.9	1.01
32-32.9	.89	39-39.9	1.03
33-33.9	.91	40 & above	1.05
34-34.9	.93		

Canon City and Florence, Col.	$0.90

SOUTH AND SOUTHWEST TEXAS

All Shown Below Posted by Humble Oil & Refining Co. (Aug. 11, 1939)

Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoboroski crudes	$0.96
Van crude	$0.93
Conroe	$1.27

(Oct. 2, 1939)

Flour Bluff and Jim Wells County	$1.23

(Sept. 14, 1939)

Hardin, Liberty county	$1.10

Oct. 12, '38, Magnolia posted $0.96 in Darst Creek; $0.87 in Luling; $0.99 in Lytton Springs; $1.14 for Cleveland, and $1.02 in Hardin, both in Liberty county, Tex.

Oct. 12, '38, The Texas Co. posted $0.96 in Darst Creek.

(Continued on next page)

CRUDE OIL PRICES

(Continued from preceding page)

***Anahuac-Dickinson** (Oct. 2, 1939)

Below 20°	$0.81	30-30.9	$1.03
20-20.9	.83	31-31.9	1.05
21-21.9	.85	32-32.9	1.07
22-22.9	.87	33-33.9	1.09
23-23.9	.89	34-34.9	1.11
24-24.9	.91	35-35.9	1.13
25-25.9	.93	36-36.9	1.15
26-26.9	.95	37-37.9	1.17
27-27.9	.97	38-38.9	1.19
28-28.9	.99	39-39.9	1.21
29-29.9	1.01	40 & above	1.23

*Anahuac-Dickinson includes Cedar Point, Fairbanks, Gillock, Hull, Pierce Junction and Raccoon Bend (shallow sand) and Turtle Bay.

Raccoon Bend (Deep sand crude) Tomball and Satsuma (Aug. 11, 1939)

22-22.9	$0.95	32-32.9	$1.15
23-23.9	.97	33-33.9	1.17
24-24.9	.99	34-34.9	1.19
25-25.9	1.01	35-35.9	1.21
26-26.9	1.03	36-36.9	1.23
27-27.9	1.05	37-37.9	1.25
28-28.9	1.07	38-38.9	1.27
29-29.9	1.09	39-39.9	1.29
30-30.9	1.11	40 & above	1.31
31-31.9	1.13		

Dec. 3, 1938, Magnolia posted above price and gravity schedule in Tomball. Effective Aug. 29, 1939, Stanolind met Humble in Tomball, except that Stanolind's schedule begins with below 29 at $1.07.

LOUISIANA-ARKANSAS

Posted by Standard Oil Co. of Louisiana

(†) (For effective dates, see footnote)

Gravity	*N. La. Ark. Sweet	Bunkie Eola, La.	*South La. Sour	*Ark. Sour	Baton Rouge-University
Below 20°	....	....	....	....	$0.79
20-20.9	$0.73	$0.83	‡$0.74	$0.63	.82
21-21.9	for	for	.77	for	.85
22-22.9	oil	oil	.80	oil	.88
23-23.9	Below	Below	.83	Below	.91
24-24.9	25°.	25°.	.86	25°.	.94
25-25.9	.75	.85	.89	.65	.97
26-26.9	.77	.87	.92	.67	1.00
27-27.9	.79	.89	.94	.69	1.02
28-28.9	.81	.91	.96	.71	1.04
29-29.9	.83	.93	.98	.73	1.06
30-30.9	.85	.95	1.00	.75	1.08
31-31.9	.87	.97	1.02	.77	1.10
32-32.9	.89	.99	1.04	.79	1.12
33-33.9	.91	1.01	1.06	.81	1.14
34-34.9	.93	1.03	1.08	.83	1.16
35-35.9	.95	1.05	1.10	.85	1.18
36-36.9	.97	1.07	1.12	.87	1.20
37-37.9	.99	1.09	1.14	.89	1.22
38-38.9	1.01	1.11	1.16	.91	1.24
39-39.9	1.03	1.13	1.18	.93	1.26
40 & above	1.05	1.15	1.20	.95	1.28

(Aug. 30, 1939)

Smackover, Ark	$0.73
Cotton Valley Distillate	$1.20

*N. La.-Ark. Sweet includes Caddo, Cotton Valley, Cross Lake, De Soto, Haynesville, Homer, Rodessa, Sabine and Sligo, La. crudes, and Miller county, Ark. S. La. Sour includes Choctaw, Darrow, N. Crowley, Roanoke and St. Martinsville. S. Ark. Sour includes Buchner, Magnolia and Village pools.

†N. La.-Ark. Sweet crude and S. La. Sour effective Aug. 30, 1939, except Cross Lake, La., Sept. 7, Baton Rouge-Univ., Sept. 11, and Bunkie and Eola, Oct. 23, 1939; and Ark. Sour, Sept. 13, 1939.

‡For Below 21°.

Effective Sept. 8, 1939, Gulf Refg. Co. met S. O. La's. N. La.-Ark. Sweet prices in Bull Bayou, Caddo, Crichton, De Soto, Haynesville, Homer, and El Dorado

Posted by Arkansas Fuel Oil Corp.

Urania, La. (Jan. 28, 1937)	$1.02

Posted by Continental Oil Co.

(Oct. 11, 1938)

Tepetate and Ville Platte, La.	$1.03

(Jan. 1, 1939)

Abbeville, La.

Below 36	$0.92	38-38.9	$0.98
36-36.9	.94	39-39.9	1.00
37-37.9	.96	40 & above	1.02

Posted by Caddo Crude Oil Purchasing Corp.

(Aug. 14, 1939)

Allison area, Shreveport field	$0.95

Lisbon, N. La. (Sept. 14, 1939)

27-27.9	$0.66	32-32.9	$0.76
28-28.9	.68	33-33.9	.78
29-29.9	.70	34-34.9	.80
30-30.9	.72	35 & above	.82
31-31.9	.74		

Lisbon prices met by Gulf, Sept. 14.

Note: S. O. Louisiana prices in all La.-Ark. fields, effective Oct. 5, 1938, are on 100% tank table basis.

GULF COASTAL FIELDS

(a) (For effective dates, see footnote)

Gravity	Humble Sinclair Stanolind	Continental Refugio Crude (Humble, Continental)	Texas Co.	Shell
Below 20	$0.86	$0.91	$0.86	(b)$0.79
20-20.9	.88	.93	.88	.81
21-21.9	.90	.95	.90	.83
22-22.9	.92	.97	.92	.86
23-23.9	.94	.99	.94	.89
24-24.9	.96	1.01	.96	.92
25-25.9	.98	1.03	.98	.95
26-26.9	1.00	1.05	1.00	.98
27-27.9	1.02	1.07	1.02	1.00
28-28.9	1.04	1.09	1.04	1.02
29-29.9	1.06	1.11	1.06	1.04
30-30.9	1.08	1.13	1.08	1.06
31-31.9	1.10	1.15	1.10	1.08
32-32.9	1.12	1.17	1.12	1.10
33-33.9	1.14	1.19	1.14	1.12
34-34.9	1.16	1.21	1.16	1.14

(*Continued in next column*)

Gravity	Humble Sinclair Stanolind	Continental Refugio Crude (Humble, Continental)	Texas Co.	Shell
35-35.9	1.18	1.23	for	for
36-36.9	1.20	1.25	oil	oil
37-37.9	1.22	1.27	34° &	34° &
38-38.9	1.24	1.29	above.	above.
39-39.9	1.26	1.31		
40 & above	1.28	1.33		

(a) Effective Oct. 2, 1939 by Continental, Humble and Texas Co.; Oct. 3, 1939 by Sinclair and Stanolind; Aug. 29, 1939 by Shell. Stanolind's lowest grade is below 21, at $0.88. Refugio, effective Oct. 2, '39 by Humble.

(b) Shell posts these prices in Iowa district, Black Bayou and White Castle, La.; prices in Iowa district have 2 lower grades: below 18, at $0.75, 18-18.9, $0.77; and 19-19.9, is $0.79.

Note: Humble's Gulf Coast prices apply in these Texas fields: Amelia, Clear Lake, Goose Creek, Mirando which includes Duval, Jim Hogg, Webb and Zapata counties and Heyser and Placedo fields; Mykawa, Sugarland, Thompsons and Webster.

Humble's prices in Refugio include crudes purchased in Saxet, East White Point, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

Stanolind's prices apply in High Island and Spindletop; also in Clinton, Hastings and South Houston, where, effective Jan. 1, 1940, lowest grade is below 21° at $0.88; rest of schedule same as other Gulf Coast. Magnolia posts Mirando, effective Oct. 2, same prices as Humble. Texas Co.'s prices are in Texas and La., Gulf Coast; its prices on Refugio are same as Humble's up to 28 gravity; 28 & above, $1.09; on Duval-Mirando same as Humble's up to 28; 28 & above, $1.04; it posts Golden Meadow, La., 24-30 grav., $0.90, plus 2c differential, to 40 & above, $1.10.

Posted by Shell Oil Co., Inc. (Aug. 29, 1939)

Gibson field, Terreborne Parish, La.	$1.04

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co.

(Effective Oct. 1 1, 1938)

Salt Creek, (except Tensleep crude), Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma-Kansas, ranging from $0.86 to $1.10, which see under Mid-Continent crude on previous page.

Tensleep, Salt Creek field	$0.646
Iles, heavy	0.92
Elk Basin, light	0.90
Grass Creek, light	0.90
Frannie light	0.55
Grass Creek, heavy	0.40
Hamilton Dome, Wyo	0.35
Frannie heavy	0.42

Posted by Ohio Oil Co. (Oct. 11, 1938)

Elk Basin, Wyo.	$0.90	Rock Creek	1.00
Grass Creek, light	0.90	Lance Creek	0.77
Dry Creek, Mont.			0.92
Grass Creek, heavy (May 1, 1938)			$0.50
Sunburst, Mont. (Nov. 16, 1937)			$0.90

Posted by Continental Oil Co.

(Oct. 11, 1938)

Cat Creek, Mont.	$1.10
Big Muddy, Wyo.	0.98
Lance Creek, Wyo.	0.77

CALIFORNIA, *Posted by Standard Oil of California*

**All gravities above those quoted take highest price offered in the field. Prices effective Feb. 1, 1940*

Gravity	Signal Hill (Long Beach) and others*	Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley Canal	Colea Levee Richfield Western	Mountain View and others**	Elk Hills	Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria Val. (Union Oil, Sept. 1 '39)
14-14.9	$0.65	$0.64	$0.63	$0.64	$0.65	$0.61	....	$0.65	$0.61	$0.61	$0.62	$0.63	....	....	....	$0.60	$0.60	$0.60	$0.60	$0.60	....	$0.42
15-15.9	.65	.64	.63	.64	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.44
16-16.9	.65	.64	.63	.64	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.45
17-17.9	.65	.64	.63	.68	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.46
18-18.9	.65	.64	.63	.71	.65	.65	....	.68	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	....
19-19.9	.69	.64	.67	.75	.70	.69	....	.72	.61	.65	.62	.63	....	....	....	.60	.64	.64	.64	.61	$0.60	....
20-20.9	.73	.64	.72	.79	.76	.74	....	.75	.65	.69	.62	.67	....	....	....	.60	.69	.69	.69	.62	.60	....
21-21.9	.78	.64	.76	.82	.81	.78	....	.79	.69	.73	.62	.72	$0.63	....	....	.64	.74	.74	.74	.66	.60	....
22-22.9	.82	.69	.81	.86	.86	.82	....	.82	.73	.77	.66	.76	.63	....	....	.68	.79	.79	.78	.70	.63	....
23-23.9	.86	.75	.85	.89	.92	.86	$0.71	.86	.78	.82	.71	.81	.67	....	....	.71	.84	.84	.82	.74	.67	....
24-24.9	.90	.80	.90	.93	.97	.90	.77	.89	.82	.86	.75	.85	.72	....	....	.75	.89	.89	.86	.78	.71	....
25-25.9	.95	.86	.94	.96	1.02	.95	.82	.93	.86	.90	.80	.89	.77	....	....	.79	.94	.94	.90	.82	.75	....
26-26.9	.99	.91	.99	1.00	1.08	.99	.88	.96	.90	.94	.84	.94	.82	....	....	.83	.99	.99	.95	....	....	....
27-27.9	1.03	.97	1.03	1.04	....	1.03	.94	1.00	.94	.98	.89	.98	.87	$0.83	$0.92	.87	1.04	1.04	.99	....	....	....
28-28.9	1.07	1.02	1.07	1.07	....	1.07	.99	1.03	.98	....	.93	1.02	.91	.86	.96	.91	1.09	1.09	1.03	....	....	....
29-29.9	1.10	1.07	1.11	1.10	....	1.10	1.04	1.06	1.02	....	.98	1.06	.96	.90	.99	.95	1.14	1.14	1.07	....	....	....
30-30.9	1.14	1.12	1.15	1.14	....	1.14	1.09	1.09	....	....	1.02	1.10	1.01	.94	1.02	.99	1.19	1.19	1.11	....	....	....
31-31.9	....	....	....	1.17		1.17	1.14	Elwood Terrace			1.07	1.14	1.05	.98	1.06	1.02	1.24	1.24	....	....	....	....
32-32.9	....	....	....	1.20		1.20	1.19	F. o. b. ship.			1.11	1.18	1.09	1.02	1.09	1.06	1.29	1.29	Kettleman Hills			....
33-33.9	....	....	....	....		....	1.24	....	$1.21	....	1.15	1.22	1.14	1.06	1.13	1.10	1.34	1.34	....	$1.12	....	....
34-34.9	....	....	....	....		....	1.29	....	1.25	....	1.20	1.26	1.19	1.10	1.16	1.14	....	....	....	1.17	....	....
35-35.9	....	....	....	....		....	1.34	....	1.29	....	1.24	....	1.23	1.14	1.20	....	....	....	....	1.21	....	....
36-36.9	....	....	....	....		....	1.39	....	1.33	....	1.28	....	1.27	1.18	1.23	....	....	....	....	1.25	....	....
37-37.9	....	....	....	....		....	1.44	....	1.37	....	1.33	....	1.31	1.22	1.26	....	....	....	....	1.29	....	....
38-38.9	....	....	....	....		....	1.49	....	....	....	1.37	....	1.36	1.25	1.30	....	....	....	....	1.33	....	....
39-39.9	....	....	....	....		....	1.54	....	....	....	1.42	....	....	1.29	1.34	....	....	....	....	1.38	....	....
40-40.9	....	....	....	....		....	1.59	....	....	....	1.46	....	....	1.33	1.37	....	....	....	....	....	....	....
41-41.9	....	....	....	....		....	....	....	....	....	1.50	....	....	1.37	1.40	....	....	....	....	....	....	....
42-42.9	....	....	....	....		....	....	....	....	....	1.54	....	....	1.41	1.44	....	....	....	....	....	....	....
43-43.9	....	....	....	....		....	....	....	....	....	1.59	....	....	1.45	1.47	....	....	....	....	....	....	....
44-44.9	....	....	....	....		....	....	....	....	....	1.63	....	....	1.49	1.51	....	....	....	....	....	....	....
45-45.9	....	....	....	....		....	....	....	....	....	1.67	....	....	1.53	1.54	....	....	....	....	....	....	....
46-46.9	....	....	....	....		....	....	....	....	....	1.71	....	....	1.57	1.57	....	....	....	....	....	....	....
47-47.9	....	....	....	....		....	....	....	....	....	....	....	....	1.61	....	....	....	....	....	....	....	....
48-48.9	....	....	....	....		....	....	....	....	....	....	....	....	1.64	....	....	....	....	....	....	....	....

F.O.B. Standard Pipeline

*El Segundo prices same as Signal Hill. Wilmington prices same as Signal Hill, except below 19 gravity prices are: 14-16.9, $0.60; 17-17.9, $0.62; 18-18.9, $0.64.

**Includes Newhall, McKittrick, Kern River, Round Mountain and Kern Front, schedule for which ends with 19-19.9. Mountain View schedule begins with 19-19.9.

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Rules 'Time Out' Periods Are Under Wage-Hour Law

N. P. N. News Bureau

WASHINGTON, June 10.—Payment of employes for time out during short rest periods or "periods up to and including 20 minutes," was ordered today by Labor Department's Wage and Hour Division.

Final decision on whether or not employes will be paid, when rest periods customarily taken by employes exceed 20 minutes, will rest with the regional Wage-Hour directors, Administrator Fleming announced.

Regional directors will be guided by the following considerations in considering such cases. Freedom of the employe to leave the premises and go where he pleases during the intermission; duration of the intermission —whether sufficient to permit the employe reasonable freedom of action and a real opportunity for relaxation; whether intermission is clearly not an attempt to evade or circumvent the provisions of the Fair Labor Standards Act.

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"STRICTLY PERSONAL"

New Jersey Golfers

Left to right, Frank G. Campbell, golf committee chairman of New Jersey Oil Trades Assn.; W. W. Krautter, whose 77 gross won prize; and Howard Van Buskirk, who won one of the special prizes

Annual championship golf outing and dinner of the New Jersey Oil Trade Assn., held June 6 at Suburban Golf Club, Union, N. J., drew a record attendance with 85 playing golf and 150 at the dinner, **Joseph H. Gunn,** secretary reports.

Sidney R. Craven, Ridgefield, N. J., Eastern Industries, won possession of the President's cup for 1 year, largely through aid of a large handicap, in accordance with the prevailing secret handicap. Mr. Craven had a gross score of 141 for 18 holes, but a 93 handicap brought his net to 48, lowest of the day.

P. A. Manning, Morristown, N. J., Hobson Oil Co., turned in the best gross score: 72, and received the first guest prize.

A peculiar twist to Mr. Manning's score revealed that he drew a handicap of 0 in a "secret handicap." His card read 72-0-72.

Walter W. Krautter, Maplewood, N. J., W. W. Krautter Co., with 71, including handicap of 6 strokes, carried off prize for low gross score.

Lawrence A. Ryan, Newark, Fiske Brothers Refining Co., president of the association, made the presentation of the championship cup. He also made an appeal for Red Cross funds, which brought a total collection of $37.

Frank G. Campbell, Sun Oil Co., chairman of the golf committee, called the names of 25 members and 15 guests who received merchandise prizes in accordance with their scores. Mr. Campbell was the 1939 champion. His score this year was 79-6-73.

A delegation from the Oil Trades Assn. of New York attended the dinner, among whom were **Joseph C. Smith,** secretary. Other guests included Bert Squier, Philadelphia, Squier, Sanderson Co.; **Charles V. Bacon,** New York, petroleum inspector; and **H. Mart Smith,** New York, Arrow Oil Co.

★ ★ ★

"The call of the wild" has been heard by **Paul Sweney,** Peoria, Ill., Sweney Gasoline & Oil Co., who struck out recently for the forests of New England and Canada. En route, he planned to stop at Providence, to visit his son, and will then motor through the White Mountains.

* * *

Fish "which rise to the occasion and catch the hook in mid-air" are reported to have been found by **Wyatt Patterson,** Williamsville, Ill., marketer. But Mr. Patterson will disregard all letters from Missouri, because he's not showing anybody.

* * *

When **Maurice Atkinson,** member of the California Assembly from Long Beach, proposed the now-historic California oil control bill, voters eyed it skeptically and killed it quickly. But, when the same Mr. Atkinson proposed a recent marriage bill to **Elaine Holbrook** she eyed it favorably and accepted it promptly. A few months ago, Mrs. Atkinson, world traveler, linguist and native Californian, was a scholarship student at a German university. She is now a staff writer on the "Los Angeles Evening Herald and Express."

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George A. Wahoff, Columbus, O., assistant zone manager for Pure Oil Co., recently celebrated his 31st year with the Pure Oil organization. His first job with the company was in a laboratory, checking and testing petroleum products. While Mr. Wahoff's interests are centered in his family, wife and two children, he is much "at home" with a golf club, rifle or fishing pole.

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Beautiful **Mildred Pugh,** who adorns the front cover of "Philnews," house organ of Phillips Petroleum Co., is stenographer for **Russell Harris,** assistant to **Leo Barry,** Phillips division manager at Bartlesville, Okla. Miss Pugh's selection for this honor was by a "competent jury" of Bartlesville oil men who refuse to divulge their names. Having viewed Miss Pugh's photograph, consensus in unusually well-informed oil circles is that these anonymous oil men should be congratulated upon excellent taste.

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Chet Lundeen, Denver, has left his leased Conoco service station to join Continental Oil Co.'s sales department. North Denver is the sales territory assigned him. Mr. Lundeen started in the service station business 10 years ago, and is reported "to know all the answers" from a selling angle.

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C. F. Hatmaker, New York, vice-president of Pan-American Petroleum & Transport Co., is co-operating with the U. S. Travel Bureau to encourage more traveling in this country, this government agency reports in its latest bulletin.

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In recognition of "his broad technical knowledge and special training in the field of petroleum products," **Paul McConihe,** Santa Barbara, Calif., manager of lubrication sales, Seaside Oil Co., has been elected to membership in the Society of Automotive Engineers. He is also a member of the American Chemical Society.

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Texas Christian University at Fort Worth last week elected **R. Houston Foster,** one of its "grads," as president of the board. Mr. Houston is executive vice president of Landreth Production Corp., headquartered at Fort Worth.

E. M. Landreth, head of Landreth Production Corp., was named to fill vacancy in the board membership resulting from Mr. Foster's elevation. Both of the Landreth company executives are active in the work of Independent Petroleum Assn. of America.

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Floyd E. Knox, of Boston, formerly of James B. Berry Sons' Co., announces formation of the Bay State Fuel Corp. to distribute heating oils in New England. The new company has a barge plant at Dorchester, Mass., and expects to acquire a plant in Kendall Square, Cambridge. "Knoxy" had been with the Berry company for 18 years, 14 of which were spent in the New England territory.